

# MOTOR AGE

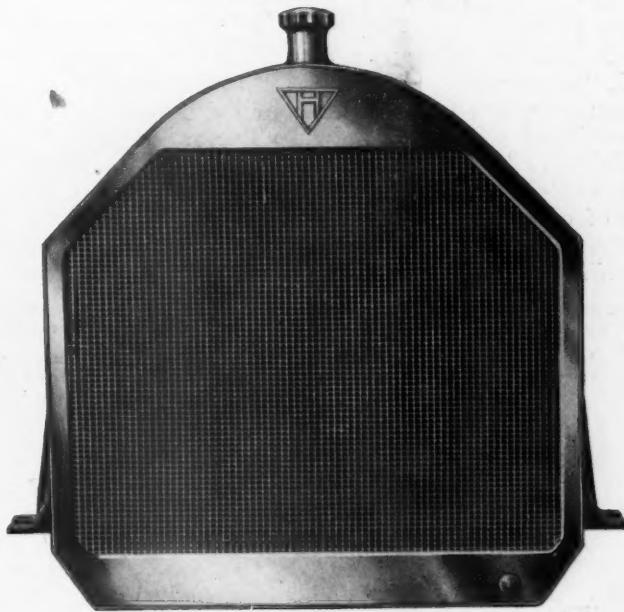
VOLUME XXI

CHICAGO, APRIL 4, 1912

NUMBER 14

## McCORD RADIATOR

*Cellular Type*



**Beauty**

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**McCORD MANUFACTURING CO.**

DETROIT

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MASTER MODEL  
PERFECT SIX MODEL

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No manufacturer in the entire industry, regardless of the number of cars he may build, produces a more complete line or a line of greater intrinsic merit than the LEXINGTON.

**The Popular Model**—touring car or roadster—at \$1400, is the just-right car for those who want maximum efficiency at minimum cost. This model is a new LEXINGTON creation, and we are justly proud of it.

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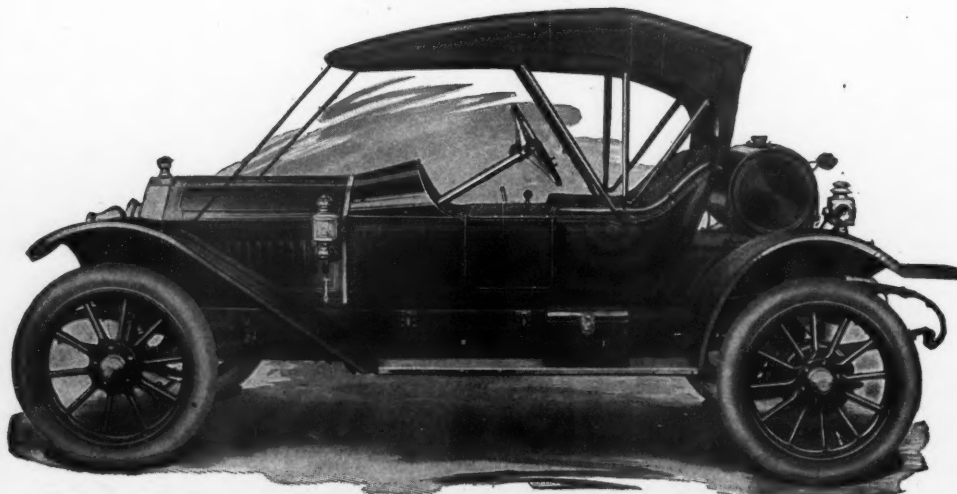
It is a veritable masterpiece, with self-starter, electric generator and lighting system.

**The Perfect "Six"**—touring car, roadster or demi-tonneau—at \$2500, is the soundest, choicest creation that we know how to build. It is offered for the judgment and consideration of those who demand the superlative. It is a car of splendid refinement, superior materials and perfect appointment.

Dealers who are interested in handling a successful line of progressive, up-to-date, profit-sharing motor cars, WRITE US. Our proposition is a genuine surprise. Write for our interesting, attractive literature.

**LEXINGTON MOTOR CAR COMPANY**

Connersville, Indiana



STANDARD MODEL ROADSTER, \$1775

# The TOURAINÉ

## SIX

WE HAVE gone into detail so that you would not in your comparisons confound the "Touraine" with any car marketing at anywhere near this price. In finish, high-grade equipment and actual cash value we have shown enough difference to prohibit such comparisons. There is no secret in our being able to put such value in our car. The "Touraine" is manufactured by a conservative Philadelphia corporation. The trade will recall that in 1910 several well-known administrators of the firm building America's highest priced six-cylinder cars formed the Nance Motor Car Co., and an inspection of the "Touraine" will quickly explain why we could minimize sales expense for we knew the best investment we could make was to put that saving into the car; in other words, to give such great value that the quality of our product would take care of the sales. For the dealer who knows the requirements necessary for a car to get a quick foothold we have an exceptional proposition, embodying a most equitable agreement that makes it worth while. If not represented in your territory our sales contract is bound to prove inviting. We have representation in most of the principal cities and more than three-fourths of the output is sold. We, however, are now creating facilities for greater production and desire representation in all unoccupied territory. Write regarding your territory to-day.

**Motor** 3 $\frac{3}{4}$ " x 5 $\frac{1}{4}$ ". All working parts enclosed; helical time gears; accurately ground cams and perfect alignment, contributing to a remarkable degree of quietness at all motor speeds. Compare these crank shaft die cast bearing sizes: Diameters, 2" Main bearings, 3 $\frac{1}{2}$ " and 4" Connecting rods 3 $\frac{1}{2}$ " lengths. Valves are 1 13-16" opening, with stem guides 4" in length.

### HIGHEST GRADE STANDARD EQUIPMENT INCLUDES

**SELF-STARTER**—Disco.  
**LIGHTING**—Gray & Davis electric combination side and tail. 10 $\frac{3}{4}$ " headlights.  
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**DEMOUNTABLE Q. D. RIMS**—(Firestone.)  
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**RUNNING BOARD MATS, TOOLS, JACK, ETC.**  
**WEIGHT**—2800 pounds, with complete equipment.  
**BODIES**—Two, four and five-passenger—fore doors.

The first popular priced six-cylinder car to equal the highest priced six-cylinder car in appearance, performance, design and accessory equipment.

Price with complete equipment

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We will gladly furnish detailed information to those wishing an illustration and analysis of the design and character of various metals and their treatments which enter into the make-up of this highest grade motor. The unusual size of these bearings and the use of alloy steels without reference to their cost but with direct reference to their best individual ability contribute to long life and a continued quietness of operation. Transmission gears are 1" face nickel chrome or vanadium steel shafts mounted on F & S bearings. The Raybestos disc clutch runs in oil. A Stromberg carburetor is used with an especially designed hot water jacket surrounding the vertical section of intake manifold, which with the exhaust heated main air supply to the carburetor, gives perfect vaporization of gas at all temperatures.

**Axles** We contracted for exact duplicates of the axles used on 1912 Oldsmobiles; the most ruggedly constructed axle obtainable, equipped with 16" brake drums and yoked at center of universal joint to a massive steel cross member which takes all torsion and drive.

**Steering Gear** Exact duplicates of this gear will be recognized as standard on the highest priced cars. It is equipped with laminated notched wheel, especially designed for the "Touraine" cars, in one of the spokes of which is recessed a cutout switch to the dual Bosch magneto.

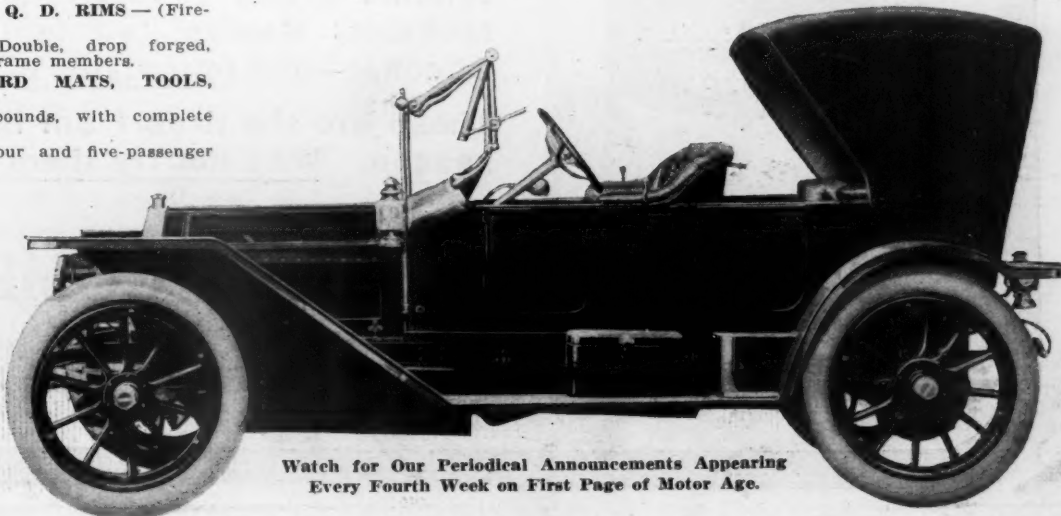
**Body** We have deliberately coupled many features and have duplicated the refinements of appearance and finish of bodies used by the manufacturer of the highest priced six-cylinder cars built in this country. "Touraine" bodies have full 10" cushions, upholstered in first-grade, hand-buffed leather. Every detail of hardware and metal trimmings has been painstakingly designed and finished so that the most careful inspection will not alter the first impression of the casual observer. Its appearance and value is equal to the highest priced light six-cylinder cars built. At no price will be found greater luxury of interior finish, convenience and refinement of appointments.

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Watch for Our Periodical Announcements Appearing Every Fourth Week on First Page of Motor Age.

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Satisfied  
thank you



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I am going to sell, this year, tires made as no other tires in the world are made, and they will cost you no more than you are asked to pay for other kinds.

I have arranged with four of the world's leading tire factories to build me a tire for your use that actually combines every element of strength and every secret of manufacture known to the four factories.

In these four immense, completely equipped plants there are at work for me today four corps of tire specialists, each of which formerly made a brand of tires which ranked among the world's best tires—Continental, G & J, Hartford and Morgan & Wright.

These experts have combined all their skill, all their knowledge, all their tire building experience to produce one uniformly superior brand of tires—**UNITED STATES TIRES**—in every one of which there is the Strength of Four.

The United States Tire line is a big one. It includes the three most popular and reliable styles of fastening—Quick Detachable, Dunlop (straight side) and Clincher—and four styles of tread.

These are the tires I am handling this season. Why not try them?

# UNITED STATES TIRE COMPANY

New York



# MOTOR AGE



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Volume XXI

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### Quick Detachable Clincher

*Easiest to Fit on any Q. D. Rim.*

☑ Extra heavy long wearing tread.

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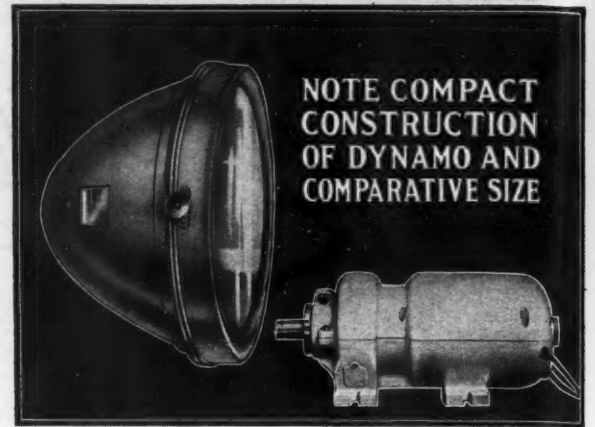
☑ Flexible beads protect inner tube.

☑ No inside envelope flap necessary.

**MICHELIN TIRE CO.**

Milltown, N. J.

**Demand It  
On the New  
Car You Buy**



# GRAY & DAVIS

## Lighting Dynamo System

### NECESSARY FEATURES

GRAY & DAVIS Dynamo has many exclusive features which are most essential. You can't get them in other systems, therefore in order to get real efficiency, it becomes necessary to use GRAY & DAVIS or take chances. With our Dynamo, you receive absolute, dependable reliability. In other systems—well, just make comparisons. They tell the story better than we can.

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Don't forget. Ask for the time-tried and time-tested system—the GRAY & DAVIS Dynamo. It is Standard Equipment—put on to every car—of the output of cars of recognized excellence.

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When people first see this Dynamo they are surprised at its beauty—its superb finish and the attention to detail. The remarkable refinement evident throughout its entire mechanism. It is compact—like a magneto—weighs but 19½ lbs. and the motor operates it with but 1-6 H. P. The Dynamo, battery, Junction Box, switch, cut-out and special armored wiring, constitute the complete equipment.

### CONSTANT SPEED

Here is the foundation upon which rests GRAY & DAVIS superiority. CONSTANT SPEED is necessary. It can only be found in our Dynamo. It enables the machine to deliver a regular, constant voltage that never varies, and you must remember that this feature alone is worth more to you than all the other systems in the world put together.

### THE FACTORY

Our Dynamos are made in the largest factory in the world, devoted to the building of automobile Dynamos. A splendid organization, capable of making QUALITY products only.

**GRAY & DAVIS, INC.** MANUFACTURERS OF **BOSTON, MASS.**  
AUTOMOBILE LAMPS

55 LANSDOWNE STREET

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# MOTOR AGE

## Uncle Sam's Problem: Mule or Motor?

Why United States War Department Is Moving so Slowly in Adopting Truck for Army Use—Traction the Keynote of the Situation



MOTOR IN MILITIA SERVICE

**M**ULE or motor? is a question of paramount importance with the war department of the United States these days. The army knows the mule—knows he is a dependable animal at all times, a beast of burden that uncomplainingly serves his country in his own humble way, which always can be relied on in both times of war and times of peace; but with the motor, that's a different proposition and one that officials of the war department are at present engaged in discussing with great earnestness in hopes of solving the problem of military land transportation which is no different now than it was 50 years ago, or if so, not so different as to be noticeable. Motive power is the mule now as it was in the days of our forefathers, despite the advent of the motor.

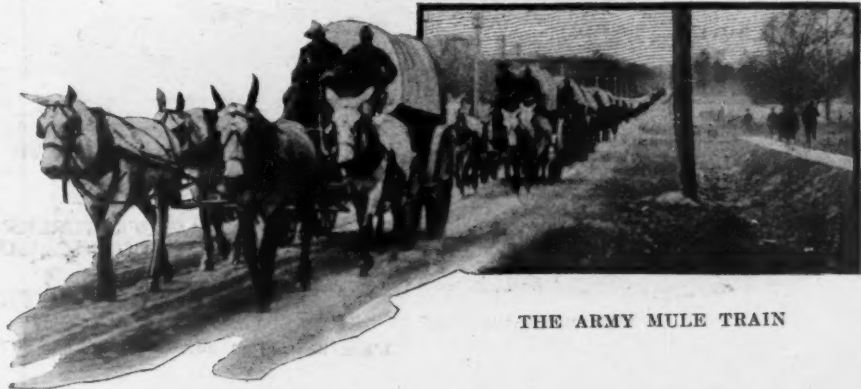
The government still stands uncommitted as to the newer methods of military

By **B. F. Miller**

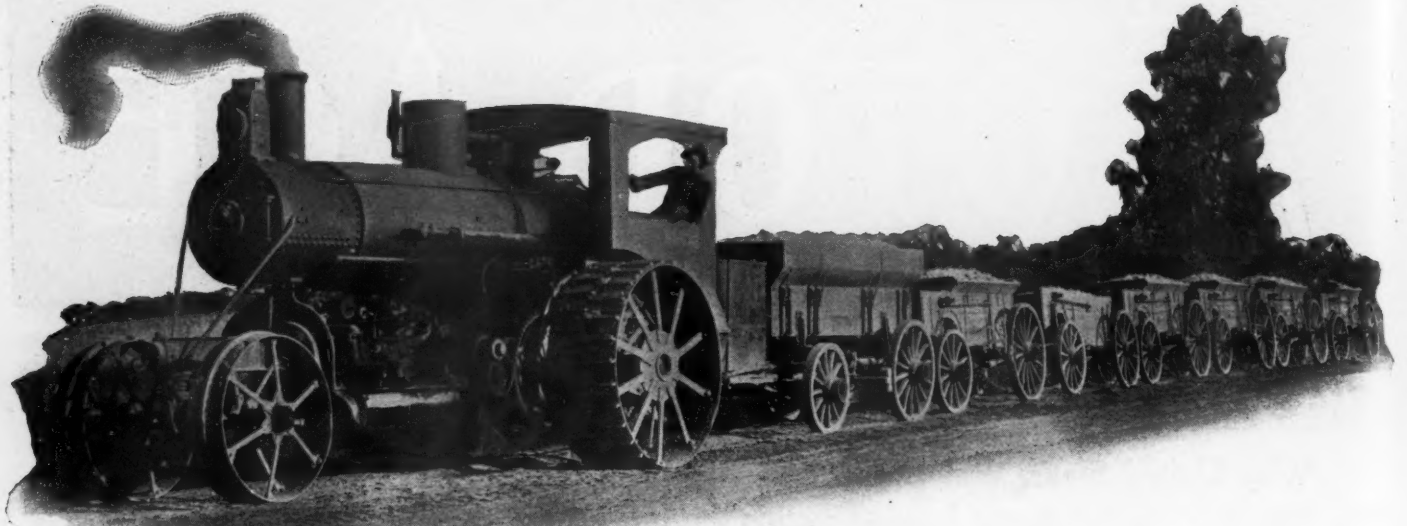
First Lieutenant, Twenty-Seventh United States Infantry, Fort Sheridan, Ill.

land transportation. It has not taken up the motor as have several European countries—not but what it would like to, but because the war department is not as

yet convinced that the motor meets the peculiar conditions that exist in this country—conditions that are not found elsewhere. Here we lack roads, whereas in Europe the highways are almost boulevards. Here, like as not, the soldiers might be sent into territory where even the mule would be handicapped in mak-



THE ARMY MULE TRAIN



STEAM TRACTOR THAT HAULS WAGON TRAIN CARRYING ROAD MATERIAL

ing progress, where a great army would be tied up because of inability to get supplies and keep in touch with its base. Herein, then, lies the real secret why the United States government does not stand committed to the motor car. The power vehicle has made good so far as mechanical perfection is concerned—we all admit that there is little question but what the modern motor can do its work day in and day out without wearying when the roads are good or even passing fair, but we are far from being sure that it could keep pace with the army where traction is lacking.

#### Traction the Keynote

Traction—that's the keynote to the whole situation so far as the government is concerned. When the manufacturers of motor trucks can satisfy the government that their cars can go any place a mule can, then that day will the motor truck as a mechanical motive power in military land transportation be given serious consideration. The manufacturer who can put his truck into service and run it where roads there are not, where

grades are so steep as to make even the nimble-footed mule put on tire chains, is the man who will be a great benefactor to the motor industry.

So far the federal government has not committed itself very strongly in the matter of motor trucks. The quartermaster-general at Washington is authority for that in that his report shows that at the present time Uncle Sam is the owner of just twenty commercial motor vehicles. There are seven in use at the quartermaster depots in the United States; three more in use at army posts in this country; three which are being given experimental tests by the war department and seven more working at the army posts in the Philippines—surely not a formidable outfit for an army the size of ours.

#### Speed Not Necessary

The government is not looking for speed when it comes to motor trucks. Speed is not needed in the army, for even our friend the mule is plenty fast enough to keep up with the infantry which travels on its marches at about  $2\frac{1}{2}$  miles an

hour. But even that pace is terrific in cross-country work where a truck cannot obtain traction. A mule can go places where the motor truck cannot in its present form and because of this versatility, if you wish to call it such, he has the preference at the present time.

#### Caterpillar Drive

My investigations have led me to believe that in order to have a convincing argument to advance to the war department it will be necessary to fit the motor truck with some sort of a device which will give this traction and I am a firm believer in what is known as the caterpillar, a device which carries its own road with it, which makes a boulevard out of a morass and which can run along at 3 or 4 miles an hour regardless of highway conditions. The caterpillar has been used with success abroad and over there they are not in the need of such a device as we are. Briefly, the caterpillar drive is described as follows:

The weight of the engine is carried by two trucks which are spring connected with the main frames. Each truck has four wheels smaller, but built on the exact principle of the car wheel. These eight wheels, four on each side, run on a steel track, which is made of steel links and really is an endless chain passing over two sprockets, front and rear. The rear one is the drive sprocket and the front wheel a blank sprocket acting as an idler. The truck wheels run on the inside of the track or chain, which follows out the exact principle of a locomotive and steel rail. On the outside of the track on each link is a steel shoe. This shoe comes in direct contact with the ground. This track is equipped with these shoes in widths of from 15 to 36 inches, depending on the condition of the ground on which the truck is being used. The length of the caterpillar track, in contact with the ground constantly, makes it impossible to drop into holes



WHITE TRUCK NOW IN ARMY SERVICE



or hollows. If the ground is so soft a wheel would sink into it, the caterpillar, traveling on its smooth steel track, keeps moving. It does not use the ground for a road but only for a roadbed on which to lay its track.

I do not say that it will be necessary to utilize the present form of caterpillar for truck work, but that is the basic idea along which truck manufacturers must work in my opinion. No doubt there are in use at present and will be invented other devices to give proper traction to the drive wheels of the motor trucks and tractors. The extension wheels of the Avery truck and the Groman wheel are ones that are in use at present and are said to be efficient.

**Division of Transportation**

Military means of transportation is divided into rail, water and land transportation and since the advent of the aeroplane and dirigible balloon, we have a fourth class, which may be called air transportation. We are, however, in this article dealing only with the possible application of mechanical motive power to military land transportation.

Our regular army at the present time is supplied with transportation for the regimental trains only and in case of sudden war it would have to be supplied with a large number of additional wagons, such as field trains for brigades, divisions and for field armies, combat trains, ammunition trains and supply trains and also numerous other trains for the medical department and on the line of communications. All of this transportation would have to be obtained before we could take the field supplies as prescribed in our field service regulations. On account of the large number of animals that would be required should this country suddenly find itself plunged into war, the matter of motor transportation becomes one of great moment and one to which the industry as a whole should give considerable thought.

**Militia First Line of Defense**

It is now our policy to make the militia as efficient as part of our first line of defense, and we have all seen the militia come to maneuver camps with practically no trains and no animals for their artil-



SAMPSON TRUCK BUILT ACCORDING TO ARMY SPECIFICATIONS

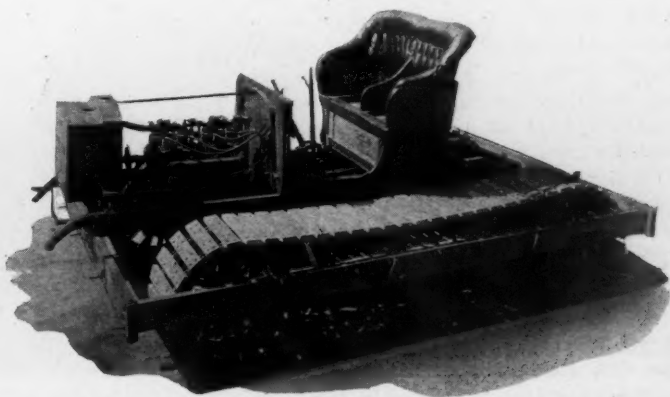
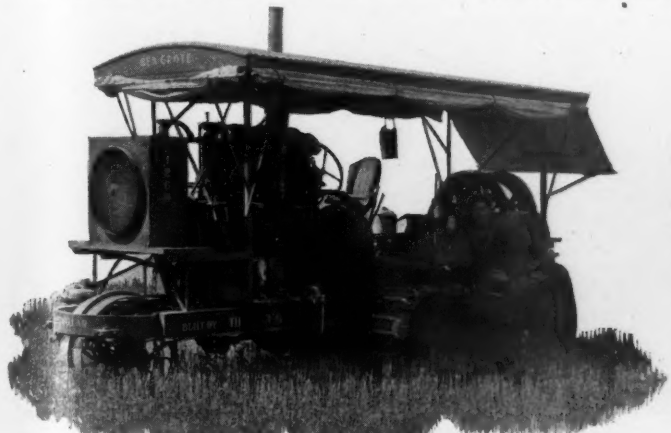
lery, and in case of a sudden war it will be wagons and field artillery that are most needed and hardest to obtain and train. It is not probable in times of peace that we will keep on hand this large amount of transportation required, when the cost of upkeep is considered, but after the initial cost of wagons and guns, the cost of upkeep is comparatively small; it is the animal motive power that is the most serious problem.

**Mechanical Power Wanted**

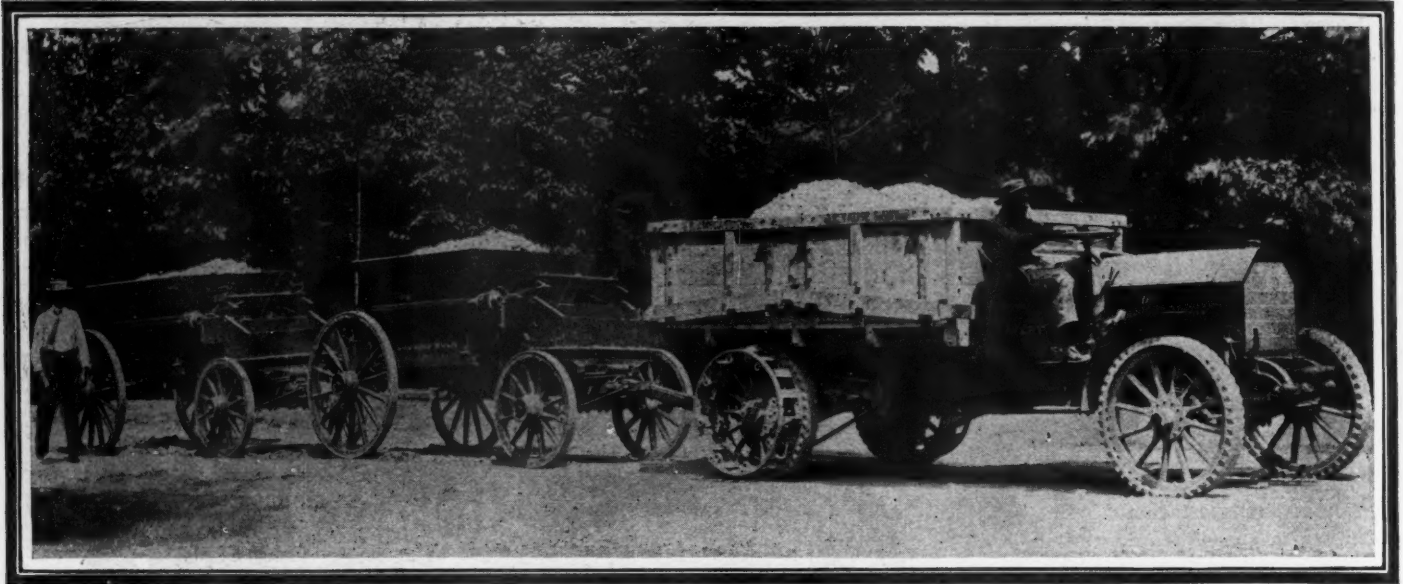
If some system of mechanical motive power can be devised so that our regular army and militia can take the field on short notice until animal transportation can replace it where necessary, then the efficiency of our first line of defense is materially increased, and it will be unnecessary to have the expense of keeping on hand the large number of animals required for the proper equipment.

We of the army already are familiar with several forms of motive power. We

divide the mechanical hauling apparatus into three classes. First we have the motor used as a draft animal, where the net load is pulled from the draw bar, this class being called tractors. Second is one in which the motor is used as the pack animal or where the net load is carried on the same wheels as the motor and the power applied to the wheels or to a part of them. Third is where the method is a combination of the two others, where part of the load is on the motor and part on the trailers pulled from behind from the drawbar. The second class is theoretically the most economical of power for the reason that the only loss is in transferring the power from the engine to the drive wheels, while in the first class sufficient weight must be given the bearing points of the drive wheels, in contact with the road, to prevent them from slipping and idly turning around. However, when it is necessary to carry a large load at a slow rate



CATERPILLAR DRIVE AS IT IS APPLIED TO FARM IMPLEMENTS AND TO A MOTOR CHASSIS



EVERY MOTOR TRACTOR HAULING WAGONS—NOTE EXTENSION REAR WHEELS TO GAIN TRACTION

of speed and where the road conditions warrant it, the first class is undoubtedly the most economical.

In the United States we have steam and gas traction engines for the first class, for the second class we have the motor trucks operated by gasoline, steam and electricity and for the third class we have the tractor trucks and multiple-unit road trains. Any one of these may, at no distant date, be adapted to military use.

#### Steam Tractors

Taking up the matter of steam tractors first, we find that there are two types of heavy hauling engines—topmounted, where the engine is mounted on the boiler shell, and the type where the engine or power plant is not attached directly to the boiler. The steam traction engines are built in sizes varying from 16 to 50 tractive horsepower and the weight varies from 8 to 20 tons. The cost of hauling with steam tractors is from one-third to one-half that of hauling with animals, depending on the roads and the cost of fuel in the vicinity. For military use the steam tractor never can be used with field and combat trains, for the reason that in order to be economical and efficient the tractor would be too heavy to cross the bridges and operate over the roads that may be encountered. This tractor is not efficient on very steep grades and muddy, sticky roads, either. Therefore, its use is limited to special cases, such as hauling supplies from a permanent base at the end of rail or water transportation to secondary bases in the interior. Also when an army of occupation has large garrisons in the interior in towns and districts remote from rail and water facilities and when these garrisons are to remain in the districts for a long time. The steam tractor also can be used for building roads, hauling siege and fortress artillery into place, running machinery and digging intrench-

ments. When compared with other forms of tractors the advantage of steam is its reliability.

The construction of the gas traction engine is very similar to the steam tractor in regard to wheels, chassis, gearing and shafting and the same requirements necessarily obtain in regard to these parts. The only real difference is in the power plant. The standard types of gas tractors are four-cycle, but differs from the motor car engine in being built more heavily, is run at fewer revolutions per minute and is built to carry a heavy load continuously. The principal advantages of the gas tractor over steam are that it can be made to weigh less for corresponding power; has none of the boiler and firebox troubles; the power of the engine is not affected by the steep grades, and as there is no fire to build or steam to get up, it always is ready to start. For military use this engine is not so vulnerable to small arms and shrapnel fragments as is the steam engine. The speed of the gas tractor varies from 2 to 6 miles an hour, but the speed depends a great deal on the roads. The principal disadvantages of the present gas tractor as compared with the steam ones is their unreliability. While most anyone of ordinary intelligence can operate a gas engine, it requires quite a bit of mechanical knowledge to keep it in condition. The

gas tractor can use in the way of fuel gasoline, kerosene, gas engine distillate and denatured alcohol. The cost of operation varies according to the fuel. The average amount used is 1-10 gallon per brake horsepower per hour. The most common size of gas tractor built in this country is the 45-brake horsepower, which gives from 22 to 25 tractive horsepower. The cost of operating this engine is 72 cents per hour with gasoline at 16 cents; 45 cents an hour with kerosene at 10 cents, and 31½ cents per hour with distillate at 7 cents. To these amounts should be added about 10 cents per hour for lubricants. The average load for hauling over ordinary country roads, where the grades do not exceed 12 per cent, is ½ ton per brake horsepower. For military use the gas tractor will be used in the same manner as the steam tractor.

#### Caterpillar Tractor

As I mentioned above, the caterpillar tractor is perhaps the most adaptable to military use. The caterpillar arrangements make it possible to travel on muddy, sticky roads and over ground that would be impassable for the drive-wheel tractor. It is claimed it will, therefore, operate over any ground that is suitable for loaded wagons. The low speed is about 2 miles per hour and high speed about 4. The manufacturers claim it will do the work of from twenty-four to thirty horses, depending on the roads. The horsepower is rated at 45 and the weight is about 8½ tons; the efficient net load is from 15 to 25 tons. The fuel used is gas engine distillate and the cost of operation from 45 to 90 cents per hour, depending on the cost of distillate in the vicinity. The engine under full load uses from 3 to 4 gallons of distillate per hour. It is probable this engine could be fitted with a carbureting device to enable it to burn gasoline and probably kerosene as fuel. The uses to which the caterpillar can be put are many.



PACKARD IN MILITARY SERVICE

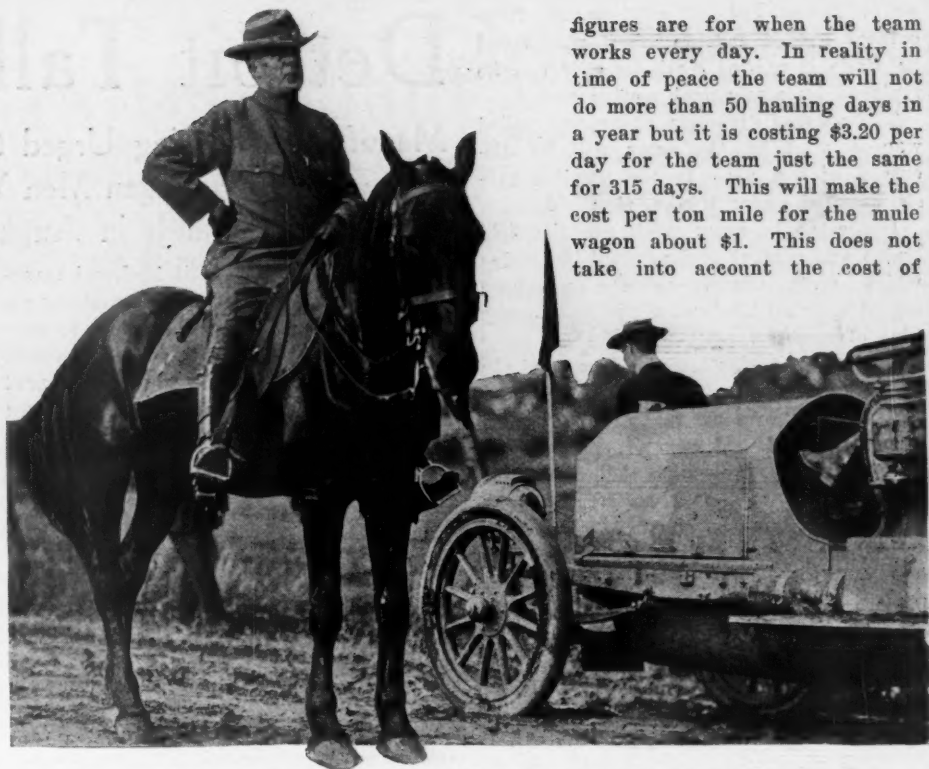
Next we come to the heavy hauling wagons which either are attached to engines or other wagons and formed into trains. The size of these wagons in trains varies from 5 tons to 20 tons. The cost varies from \$125 to \$200 for the 5-ton to \$400 to \$800 for the 20-ton wagons. The number of wagons used in a train varies from two to eight. The wagons usually are loaded to about two-third their rated capacity and the weight of the wagons varies from 250 to 500 pounds per ton capacity.

**The Tractor Truck**

The tractor truck hauls a load on the tractor and also pulls one behind on a trailer wagon. A simple definition of it is a motor truck with sufficient power to propel itself and also pull a load behind on a trailer. As a possible solution for providing motive power for militia batteries, it is not probable that a battery thus equipped would be as efficient as one with animal motive power, especially for all kinds of ground, but in case of sudden war, if the militia had a large number of batteries with tractors, it is certain that they would be much better than no batteries at all and could be used until horses and equipments were provided.

Without going into details as to the merits and uses of the multiple-unit road trains, we will hit upon the topic that is of most interest to the motor industry—the motor truck which probably is the most useful and practical kind of mechanical transportation for military use, where all the load is carried on one vehicle, and as in the case of the road train, there is no loss of power to propel a load put on to give traction to the drive wheels.

I find that motor trucks are most efficient and economical when the conditions are such that, due to their mobility, a large number of trips can be made over a given route in a given length of time.



MOTOR CAR EMPLOYED IN SIGNAL CORPS SERVICE

figures are for when the team works every day. In reality in time of peace the team will not do more than 50 hauling days in a year but it is costing \$3.20 per day for the team just the same for 315 days. This will make the cost per ton mile for the mule wagon about \$1. This does not take into account the cost of

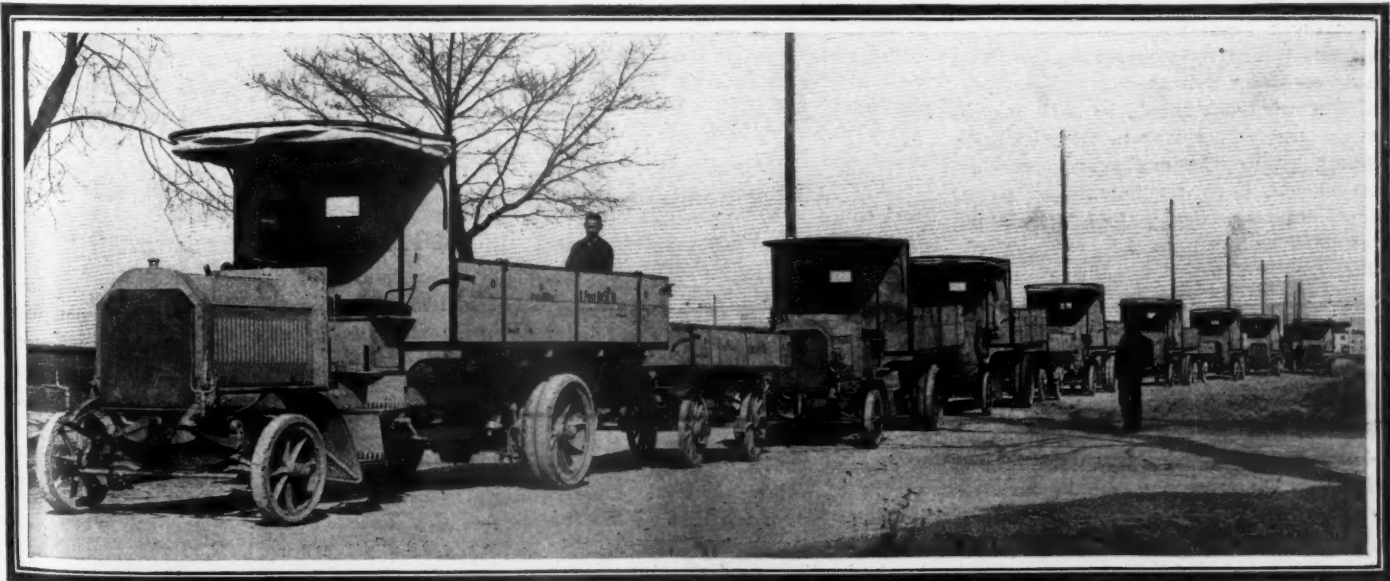
The cost of hauling varies from 30 cents per ton mile in the smaller size to 10 cents in the larger size. The cost of a standard four-mule army wagon is about \$900 complete with mules and harness, allowing \$200 for each mule and \$100 for the wagon and harness. The cost of operation if used daily will be about \$3.20 per day for the four-mule wagon, allowing \$1.50 per day for the teamster and \$1.70 for forage and incidentals. These figures allow nothing for depreciation and first cost. The normal load of the wagon is 1½ tons and taking the average march or distance the load is hauled as 15 miles, the approximate cost of hauling is about 14 cents per ton mile.

repairs and for stables. If for time of war we take, say, 150 marching days in a year—and this will be a large estimate—the cost will be about 33½ cents per ton mile.

**Advantages of the Motor**

Taking up the motor side of it, when idle the motor trucks cost very little for upkeep and require very little room for storage, compared with horses and mules. In obtaining the cost per ton mile for motor trucks, the hire of a high-priced driver and helpers were considered, but if motor trucks were applied to military use, the soldiers with a little instruction could drive, or the same \$1.50 per day teamsters could be used. So, after a comparison of the cost of hauling by

It should be kept in mind that these



FOREIGN IDEA OF MOTOR TRAIN—TRACTOR AND FLEET OF INDIVIDUAL TRUCKS

motor trucks and by mule power, it is evident that a considerable saving could be made if animal motive power can be replaced by mechanical motive power.

The various divisions of animal pulled wagons used by the army will be discussed with a view to the possible substitution of motor trucks, viz.:

Important in army work are the field trains and combat and ammunition trains which must accompany the marching troops over all kinds of roads and in any kind of weather.

The supply trains are also a part of the marching or mobile force and will encounter some of the same roads as the trains just mentioned. However, supply trains do not have to keep with the troops, but can pick out the main roads along the general route of march, and by picking out these main roads they will probably find better traveling, and the roads and bridges can be put into condition to some extent.

#### Work of Field Trains

As it is sometimes difficult for field, combat and ammunition trains to keep with troops, owing to poor condition of the roads, mud, ice, steep grades and unfavorable weather condition, it will be seen that in order for a motor truck to be used it must be able to overcome the above difficulties of travel on the roads and be able to go anywhere that a four-mule wagon fully loaded can and carry the normal military wagon load of about 3,000 pounds. The truck when loaded should be light enough to cross the ordinary military bridges and also the bridges found on country roads—about 4 tons center load—should be provided with some device or devices on the drive wheels, to enable them to get footing, so the truck will give efficient service over muddy and sticky roads and also over icy roads. It is probable that some form of the caterpillar arrangement adapted to use as wheels or drive wheels of the motor truck will be the most practical device yet invented, but there is no doubt that the inventors in motor truck trade will also invent other practical means if it is put up to them.

#### Needs of Motor Trucks

The motor truck should be able to cross fords suitable for wagon transportation without killing the engine, and the engine should have ample reserve power and at least to be able to travel loaded up grades as steep as 15 per cent. If there are two heavy planks or boards carried strapped or chained to the side of the chassis, these planks will be of material assistance on bridges and over muddy, sticky places. If each truck carries a small steel cable or heavy rope, about 40 feet long, it will be of great assistance in pulling the truck out of mud or up short steep slopes, by hooking the trucks in front or other pulling power to the one stuck. If the trucks be provided with a winding drum or niggerhead arrangement and the cable or rope tied

# Detroit Talks Big Show

## Manufacturers Being Urged to Support National Exhibition Which Michigan Men Want Held at State Fair Grounds in August—Support Sought

**D**ETROIT, Mich., April 1—Local manufacturers are again being actively solicited to support a national show, to take place at the Michigan state fair grounds during August. Up to date no formal action has been taken, nor is it known whether or not a sanction could be secured for the event. Several manufacturers have gone on record as favoring such a show. The state fair management has promised that its plant will be available. A campaign of circular letters is being waged on behalf of the show by one of the local newspapers.

The idea of an August show in Detroit is not new, its attractions having been exploited for several years. It is argued that a dealers' show at that time would enable manufacturers to line up their selling organizations early in the season. The new models could be inspected by the dealers, to whom the privilege would also appeal as enjoyable and profitable.

Undoubtedly Detroit's August show would have been long ago a real factor in the trade but for the fact that it has been very hard to interest the large manufacturers in the project.

"Why do we want our dealers gathered each year in a hall where every other manufacturer in Michigan can ride herd on them?" So spoke the sales manager of one of the largest companies recently. "We would have little to gain in a show of that kind; but there would be considerable for us to lose, in case our dealers should be stampeded. The national show here in August would be a grand thing

for a manufacturer who wants to get agents; it would be a poor thing for the firm that has its scheme of distribution organized."

While this is a typical big-factory view, it is not the only one held by all of the important members of the industry by any means, however. Several have come out in favor of the show, assigning various reasons, prominent among which is the belief that such a show would still further strengthen the hold of Detroit as the center of the world's motoring interest. Among these is William E. Metzger, who has promised to use his influence in securing official sanction for the event.

In case the show is held, it will undoubtedly command support from about all the Detroit companies, regardless of their present attitudes, it is said.

One of the active friends of the show is urging an interesting side feature in the shape of a national championship, non-motor-stop run, the cars of which would be started on the Saturday preceding the opening of the show. This would allow them to be used to carry visitors from the center of the city to the show, and would be a constant reminder of the exhibition, to the people on the streets. The cars would, of course, continue their run for more than a month, in all probability—at least until the elimination process had reduced the field to the one winning car. The promoter of the scheme says he has received promises of more than twenty cars already, in case the main project is carried through.

to a tree or fence post, it can assist itself over short steep grades or muddy pulls. The differential on the drive wheel axle should be so constructed that it can be locked and both wheels made to move or revolve rigidly together; this arrangement can only be used when the tractor is moving straight forward or backward, and hence is of no assistance on the sharp steep turns that are usually the most difficult places to get over. Another important point is that the gears, chains and other moving and bearing parts should be effectively screened or protected from mud, dirt and dust. This will add materially to the length of life of the machinery.

The suggestions given above are the result of some practical experience in hauling with a traction engine, to which all of the serious difficulties of motor truck hauling apply, only to a greater degree. Whether or not any of the vari-

ous makes of trucks in use and manufactured in the United States can fulfill the above requirements can only be determined by actual tests in the field under all conditions of weather and roads.

For use with supply trains heavier trucks can be used than those fulfilling the conditions just given.

#### Where Heavy Trucks Excel

For use on the line of communications, for hauling freight to field and supply trains at points distant from rail and water facilities, the heaviest trucks can be used to advantage, as in this case the roads and bridges can usually be put in condition.

Trucks can be used for unloading and delivering supplies at depots, maneuver camps, concentration camps in time of war and will be economical when the conditions are such that the truck in a given time can make a large number of trips under a heavy load.

# Two Cities After Plant

Cadillac Company, Making Good Its Threat to Erect New Factory Outside of Detroit, Talks of Toledo and Columbus—Former Strong Possibility

TOLEDO, O., March 30—As the result of a meeting held Friday at Detroit between representatives of the Toledo Commerce Club and officials of the Cadillac Motor Car Co., it is probable that the new plant of the Cadillac concern, employing 5,600 men, having an annual payroll of \$4,368,000 and manufacturing 1,300 cars a year, will locate in this city.

Officials of the Cadillac and General Motors companies will pay a visit to Toledo within a few days and look over the sites offered. The meeting took place at the factory offices of the Cadillac concern and lasted the greater share of the morning. The most important reasons for determining a change of location are the poor transportation facilities and factory congestion which now prevails in Detroit which handicaps the makers.

President Leland, of the Detroit concern, stated that wherever the factory is moved 100 acres of ground will be required. Detroit is suffering great loss on account of the inability of railroads entering that city either to deliver raw materials to the industries there or take care of the finished product. Hundreds and hundreds of cars have been piled up in the Toledo yards for months, unable to get out of the local yards, owing to the lack of equipment of northern railroads which has made it impossible to move the cars.

This inability of the railroads to cope with the situation was brought about by a government inspection which resulted in large quantities of equipment being con-

demned. As it was the season of the year when heavy coal shipments had to be handled it worked a considerable hardship on the railroads and incidentally on Detroit and its manufacturing concerns.

## AFTER CADILLAC'S NEW PLANT

Columbus, O., April 1—The Columbus Chamber of Commerce is making an effort to secure the location of the new plant to be built by the Cadillac Motor Car Co., which announces that it may leave Detroit, Mich. Assistant Secretary F. H. Hysell of the Chamber of Commerce presented the many advantages of Columbus as a shipping point. It is announced the new plant will either be located in Ohio or Indiana, and the city making the best showing as to transportation facilities will secure the industry.

## MERGER RUMOR DENIED

Chicago, March 29—Rumors reached Chicago today through the medium of the Wall Street Journal that a deal is pending whereby the Bethlehem Steel Co. will absorb the Chicago Pneumatic Tool Co., which is identified with the motor industry through the manufacture of a commercial motor vehicle. It was said that if the deal went through the Bethlehem Steel Co. would guarantee 5 per cent dividends on the \$6,448,800 outstanding stock of the Chicago Pneumatic Tool Co. Inquiry at the local headquarters of the latter corporation today, however, brought out the positive denial by the officers of such a proposed deal.

The advantages of motor trucks for use in the field should they prove practicable for military use are that in addition to being economical, they are not easily injured by small arm fire and shrapnel fragments, especially if the hood be covered with sheet steel shields, they are easily concealed, and they take up very little road space compared with that taken by the standard army wagon with four mules. One four-mule wagon hauling 1½ tons is allowed 20 yards of road space and it is very certain that the largest motor truck will take less than this.

The durability of trucks for military use in the field can only be determined by a series of tests under field conditions, but the durability tests in commercial use are probably more severe than the durability requirements for military use.

With a number of trucks in use sufficient to make it pay, one may be fitted

with a small machine shop for making repair parts and one man expert in making repairs and in instructing drivers can be hired as a corral boss in a train of any size.

## Uses for Motor Trucks

Motor trucks can also be used, when there is a good system of communicating roads, for rapidly transporting a number of men from one point in a line to another, and they might also be used for carrying large infantry patrols, for use with rapid fire and machine guns mounted on the chassis, and for a field wireless outfit in which everything is carried on the truck, including the power plant for running the generator as part of the truck power plant. It can, no doubt, also be used successfully in carrying and operating by the power of the motor engine, field searchlights.

For all of the above uses the motor truck transportation will without doubt

prove very economical and efficient in the land defense of our sea coast defense system, especially if the important points be connected by a good system of roads.

If encouraged and given federal advice and assistance, the state and counties along our sea coasts and also along our boundaries could be easily induced to build good roads that would materially increase the mobility and efficiency of mechanical motive power. On account of the general use of motor cars, it would be easy to interest the owners and clubs in the good roads proposition. With good roads communicating the sea coast defenses, siege and heavier guns pulled by heavy tractors and trucks could then be used for the land defense of the land fortification system.

## Help in Land Defenses

Mechanical motive power such as tractors and trucks could then be used to a great extent for trains with the mobile troops for the land defenses. With good roads the above might be used in the land defense of the Panama canal zone.

It may not be amiss to mention here that ordinary passenger and pleasure motor cars and motor cycles may be very valuable in time of war for patrolling and messenger service and for the use of the higher commanders. Both the passenger car and the motor cycle may be valuable for signal service and can carry field telephones and buzzers. The motor cars can be fitted as wire carts and might be fitted with small wireless outfits for use in scouting and reconnaissance.

It is certain that in time of war, an army operating either friendly or in hostile territory, should there be a number of private and public motor cars available, will commandeer these motor cars, trucks, motor cycles, and, in fact, any mechanical transportation needed and apply them to military use. It is probable that the number and location of motor cars and garages will be just as important for the military authorities to know in the future, as it has been in the past to locate wagons and animals for both draft and riding purposes.

In view of the probable future importance of mechanical transportation for military purposes, it would no doubt prove a profitable investment should the military authorities send a small number of officers of a mechanical bent, to take a course in mechanical engineering and gas engines, at some of the leading schools that make a specialty of gas engines and especially gas engines and machinery as applied to power wagons. The course could be supplemented by courses in the shops of the leading motor truck and tractor factories. The officers would no doubt be willing to pay their own tuition if permitted to take the courses. In a few years we would then have in the army a number of officers competent to manage the mechanical transportation that is certain to be used.

# Protest Made Against Cut in Tariff

**American Car Manufacturers File Brief with Senate Finance Committee, Pointing Out that Reduction Possibly Would Mean Slash in Wages—Examples Given of Effect**

WASHINGTON, D. C., March 30.—Aroused by the Underwood bill which threatens to reduce the tariff on motor cars from 45 per cent to 30 or 33 per cent, thirteen of the big concerns in the industry have banded together and filed a protest against the measure with the finance committee of the United States senate, pointing out that a reduction in tariff might mean at least an 8 per cent reduction in the wages of the thousands and thousands of wage-earners at present employed in the American plants, it being pointed out that this would be the logical loophole because the cost of production, in many cases, cannot be reduced in any other way.

At the same time this committee of motor car manufacturers drives home a telling blow at the slow-moving courts which causes legal cases to drag for years and upset the equanimity of the industry in consequence.

"We appeal to congress for the establishment of stable conditions surrounding industry and commerce. We appeal to congress for a business administration of business matters. We appeal to congress for fewer courts of appeal and for legal methods which will provide for simple, prompt, straightforward court procedure so that the answer to any disputed question can be obtained at a cost within reasonable reach of the average manufacturer in a few weeks or months instead of after many years as now is the universal custom," says the committee.

## Tariff No Longer Politics

"The tariff no longer is a political question. It is only and should be only considered as a business question and treated and considered as all business questions in business should be considered—that is, strictly on the merits of the facts."

Henry B. Joy, president of the Packard Motor Car Co., of Detroit; W. C. Leland, vice-president and general manager of the Cadillac Motor Car Co., of Detroit; and Charles Clifton, treasurer of the Pierce-Arrow Motor Car Co., of Buffalo, compose the committee which represents, besides their own concerns, the Locomobile Co., of America, Peerless Motor Car Co., Premier Motor Mfg. Co., United States Motor Co., Nordyke & Marmon Co., Pope Mfg. Co., Hudson Motor Car Co., Metzger Motor Car Co., Willys-Overland Co., and the Waverley Co. The brief protests against the passage of the Underwood bill until the tariff board can make a complete investigation of the motor industry.

While the brief is not a very lengthy

one, it bristles with facts of interest, chief of which is the evidence offered as to the need of a protective tariff to prevent a reduction in wages in order to meet foreign competition, the claim being made that "were it not for the protective tariff policy of this country at the time the motor car industry came on the horizon, almost countless millions of dollars would have gone abroad for motor vehicles by reason of the earlier start of the industry in Europe, and American artisans would have gone without many millions of wages which the tariff has enabled them to earn."

## Wages Here and Abroad

The brief points out that the wages paid abroad are from one-third to one-half the rates prevalent in American factories, which difference in compensation is maintained by the tariff and it tells of the efforts made by European manufacturers to get into the American markets, citing the case of the Fiat company which sought to have the tariff on cars reduced to 33 per cent. This congress refused to do and the result of the 45 per cent tariff that is imposed at the present time was that the Fiat company was forced to build an American factory at Poughkeepsie, N. Y., in order to compete with the Yankee plants. From this it is deduced that somewhere between 33 and 45 per cent tariff is the line where European manufacturers find it unprofitable to come into the American market.

European makers, in addition to having the benefit of cheap labor, also have the advantage of being able to use American machinery, it is asserted, which in itself means much.

America is slowly developing its export business, it is claimed, because, first, America has most successfully developed the cheap motor vehicle of which the greater part of the export business consists, and second, because, American high-priced cars are superior to any other na-

tion's manufacture. Still, the committee thinks, this export business could be increased if there were fast American ships affording more rapid international communication; if the American consular service were more of a commercial organization and if American banking facilities were on a par with the foreign banking systems of Germany or England.

It is claimed that tariff reduction means a tendency to reduce wages and in the way of examples different cases are cited. It is stated that the list price of a typical standard 38-horsepower American chassis of the best make and latest type is, say, \$3,700: Deducting a sales commission of 20 per cent makes \$740, netting the manufacturer \$2,960 for the chassis, which it cost him on the average of \$2,350 to produce. Dividing up the cost of the chassis gives \$1,175 for material, crude, semi-finished and finished, while the labor bill is \$1,175 also. The brief continues:

"For example, the Packard Motor Co.'s payroll for the calendar year 1911, not including the service department payroll, operating salaries and experimental department payroll, was \$4,354,794.95; the number of vehicles shipped that year was 3,293; the average payroll per vehicle shipped, \$1,322.44. A similar car made in Europe and invoiced at the American custom house rates for duty purposes at, say, \$2,000, would on the reduction of the duty of 5 per cent, as proposed in the Underwood bill, result in a saving of \$100 per vehicle to the European manufacturer. To reduce the cost of that vehicle in the Packard shops would require a horizontal reduction in wages of approximately 8 per cent of \$1,322.44. A reduction in the Packard payroll aggregating nearly \$5,000,000 a year, of 8 per cent, would be a saving of \$400,000 a year approximately, which would be 4 per cent on the capital stock of the company."

## What Reduction Means

Then the brief goes on to say that in the event of the introduction of foreign competition through reduced tariff rates, the cost of production must be reduced and often no door is open for reduction of costs in a long established, well run busi-

STATISTICS FILED WITH SENATE BY PROTESTING CAR OWNERS

Maker	Capital Invested in Business	Average Number Employed	Payroll for 12 Months	Amount Material Purchased in 12 Months
Pierce-Arrow	\$ 7,281,525	3,500	\$ 2,733,255	\$ 6,340,000
Locomobile	2,000,000	1,348	1,072,000	2,200,000
Peerless	5,215,000	2,500	1,865,000	2,586,000
Packard	14,435,322	5,954	4,807,779	6,385,253
Cadillac	1,500,000	5,000	3,500,000	13,500,000
Premier	700,000	550	450,000	750,000
U. S. Motors	23,000,000	8,000	6,500,000	12,500,000
Marmon	2,225,000	1,075	730,841	1,282,917
Pope	1,945,804	1,586	1,317,404	1,535,424
Hudson	2,000,000	920	801,000	5,808,000
Everitt	1,080,000	900	600,000	2,500,000
Waverley	600,000	425	300,000	500,000
Overland	6,000,000	3,337	2,296,518	13,181,153
	\$68,007,651	35,095	\$26,973,797	\$69,068,747

# Litigation Moves Slowly in New York

ness but through a reduction in the rates of wages paid to the employes.

"The conditions of production in different American motor car factories are as widely different as it is possible to conceive," says the brief. "For example, one company—the Packard Motor Car Co.—has a payroll of \$1,322.44 per vehicle of output on vehicles marketing from \$4,000 to \$5,000. Another company—the Ford Motor Co.—marketing vehicles at a list price of \$690 per vehicle has a payroll approximately \$220,000 a month average, and makes 100 vehicles a working day, which would be an approximate average labor cost of \$90 per vehicle.

"An 8 per cent reduction in the payroll in one case amounts to \$7.20 per vehicle, and in the other case an 8 per cent reduction in the payroll amounts to a saving of \$105.79 per vehicle. In the case of the expensive vehicle as compared with the cheap vehicle, the expensive vehicle is approximately six times the market value of the other; whereas the amount of labor going into the high-priced vehicle is fourteen times the cost of the labor going into the low-priced vehicle. This illustration is set forth to point out the widely varying conditions existing in different factories producing different lines of product, and how seriously adversely a comparatively small reduction in the tariff might affect one corporation and not be a menace to the existence of the other."

Further along the brief says: "The point we desire to make is the salient fact that the Ford Motor Co. is the company which manufacturers and markets a cheap motor vehicle at a selling price of \$6,909, of which the labor cost per vehicle is approximately \$90, so that from the point of view of the Ford Motor Co., as it itself states, 'the amount of labor is an almost insignificant item' whereas, to other motor car manufacturers the item of labor runs as high as approximately to the cost of the material involved."

## GLIDE INCREASES STOCK

Peoria, Ill., March 30—Papers were filed with the county recorder this morning, showing that the capital stock of the new Bartholomew Co. at Peoria Heights, where the Glide is made, has been increased from \$200,000 to \$350,000. A meeting of the stockholders was held at the office of the plant on March 16, 1912, at which time the increase was voted.

## CAMERON WITH UNIVERSAL

Detroit, Mich., April 2—W. H. Cameron, who recently resigned as Overland engineer, has joined the staff of the Universal Motor Truck Co., of Pontiac. Gossip to the effect that this means the construction of a six-cylinder pleasure car for W. E. Flanders, who is prominent in the Universal company, is declared to be groundless by those who ought to know.

## Rule Day in United States Courts in Gotham Fails to Produce Any Action—Several Big Cases Postponed—Atlas Appeals in Suit Brought by Weed—Trade News

NEW YORK, April 2—This is a dull time in motor car litigation, rule day in the United States courts failing to develop anything sensational. The Dyer cases went over to April 15, when answers are due. Stromberg's suit against Flechter, while set for answer April 10, hardly will come up before the end of the month, while Mosler's spark plug suit against the Auto Supply Co., set for April 8, will go over to May by agreement. Norma's suit against the J. S. Bretz company also is due for another postponement.

Receiver Shepherd, handling the Wyckoff, Church & Partridge case, has been given leave by the court to continue the business for 30 days following the expiration of the 20 days already granted. The reorganization plan is being pushed by the company.

The Atlas Chain Co., of Brooklyn, has appealed from the decision of the United States district court which upheld the motion of the Weed Chain Tire Grip Co. for a preliminary injunction against the manufacture and sale of Atlas chains. The case, it is stated, was not heard on its merits in the United States district court except so far as it was necessary to go into the facts to cover the application for injunction. It was from the order of court granting the injunction and not from the decision of the court on the whole case that the appeal was made.

## WINDSHIELD SUIT STARTED

New York, April 3—Special telegram—Suit has been filed on behalf of the Twentieth Century Motor Car and Supply Co. against the Ideal Windshield Co. for alleged infringement of patent No. 1,011,892, which covers certain improvements in windshield construction. The case will be heard in the United States district court. Appearance is due by the defendant company on May rule day and time enough probably will elapse before the date of answer to carry the hearing over until fall.

## PATENT CASE REHEARING ASKED

Washington, D. C., April 1—Application for rehearing by the United States supreme court of the so-called patent monopoly case was made today by the government, through Attorney General Wickersham. The government asks leave to intervene, declaring the court's recent decision sustaining the right of patentees to restrict the use and price of accessories used with their products, thus creating a patent monopoly, is of gravest import to the people of the United States.

The attorney general says the decision

affects enforcement of the Sherman antitrust law. "The decision extends the power of patentees beyond the limits of the constitution," declared Mr. Wickersham to the court. Margaret Henry, a party to the suit in the case recently decided, also asks a rehearing.

## THE RUBBER MARKET

New York, April 3—Special telegram—Crude rubber declined 7 cents a pound from the high point in the New York market and at present stands at \$1.16 a pound for fine up river. Sellers were shy after the news of the last auction sale in London had gained circulation. At the market level the demand is much larger than it was when higher figures obtained, although most of the buying by consumers was in the coarser, heavier grades.

## STUDEBAKER ELECTS OLD OFFICERS

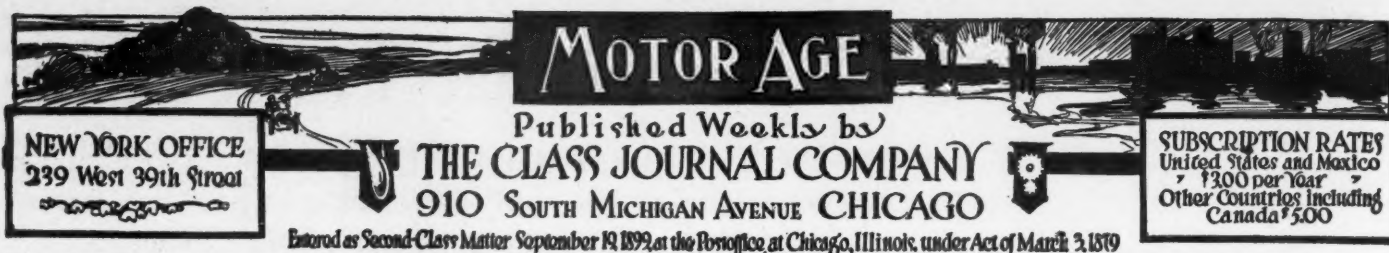
New York, April 2—The annual meeting of the Studebaker Corporation was held at the firm's headquarters in Jersey City today. The meeting considered matters of routine only. All the standing list of officers were re-elected as well as all but one of the directors whose terms expired at the meeting. The one exception was Herbert Lehman, whose place was filled by the election of Paul J. Sachs. The annual report to the shareholders was presented. The essentials in this document had been announced by the Studebakers at the last dividend date of the corporation. News that the corporation's factories in Detroit had set new records for production in March caused the directors to formally compliment General Manager J. N. Gunn on the success of his administration.

## NEWMAN BUILDING ELECTRICS

Chicago, April 1—F. J. Newman, formerly chief engineer of the Woods Motor Vehicle Co., is president and general manager of the Chicago Electric Co., announcement of the formation of which has just been made. C. J. Blakeslee, also formerly on the Woods staff, is engineer of the new company. Alfred F. Leopold is secretary and Albert Meyer treasurer. A factory has been secured at Thirty-fifth and Morgan streets and the first car will be out June 1. One chassis accommodates a variety of styles of bodies will be built.

## ELECTRIC LAMP PRICES DROP

New York, April 1—A reduction of 2 cents per lamp has been made by the General Electric Co. on frosted tungsten lamps for motor car lighting. The former price of this type of lamp was 65 cents. The clear glass bulbs are unchanged from the old list.



**MOTOR AGE**

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## Opening of the Car Season

WITH the arrival of April the opening of the touring season in many of the rural districts begins, and many car owners, who have had their cars garaged during the majority of the season, will prepare to get them into commission. When getting a car overhauled for summer use, there are many things that the owner can do himself. There are also many things which can be better done at a garage or in a competent repair shop. Irrespective as to where the work is done, one thing is certain, namely, that every car should receive more or less of an overhauling or cleaning up before starting out on the season's work.

ONE important feature which the owner can look after is that of properly caring for his tires before starting the season. If the car has remained in the garage all winter it will be best to remove the tires and make an examination of the tubes and rims. A little shellac on the rims may save the tires rusting in place during the season. Little can be done with the inner tubes, but with the outer casings there is much more opportunity. If there are small cracks or cuts in the casings the owner should secure some of the many surface preparations to fill these cracks. The main object of such work is to keep out the water. Water is the great damaging agent to the fabric of the tire, and if it is kept out the life of the tire is very greatly prolonged. Many of the so-called tire painting preparations are claimed to rejuvenate the tire fabric, whereas as a matter of fact all that can be looked to from such is preservation of the tire by protecting it from the water.

IT is equally as important to protect the tire casing from water when it is being carried on the side of the car, and in this respect many drivers are violators of all acknowledged tire etiquette. The tire maker is very careful before selling a tire to keep it at the proper temperature and to protect it as much as possible from the light of the sun. It is, however, inconsistent on the part of the purchaser of a tire to carry it on the side of his car without an ordinary covering. The least he could do is to use a standard tire cover which protects it from the direct rays of the sun and also from water. It undoubtedly assists in keeping the temperature down. Whatever car owners in the past have been careless in the matter of caring for their extra casings when carried on the side or rear of the car should adopt special precautions in such matters in the future. It is also of importance that when the car is being washed the spare casing should be removed unless it is certain to be waterproof. Frequently the washman in the garage sprays the water against the tire casing. More or less water enters the casing and remains there, gradually soaking its way into the fabric, with certain injury in store.

IT is of importance that carbon should be cleaned from the cylinders before the opening of the touring season. Carbon deposits on the cylinder heads, valve seats, and other places is destructive of good car operation, and the troubles it gives rise to are frequently attributed to other causes. There are scores of instances where carbon has resulted in the loss of compression, and the carbureter has been blamed. There are many cases where carbon has caused a motor knock, and the ignition system has been criticised for the results. Thorough removal of the carbon may call for scraping the cylinders, which is best done by an

expert workman. It remains with the owner to use some one of the carbon removers which are on the market.

REMOVING the carbon from an engine is important, but it is also important to have the entire lubrication system well cleaned out. The old oil should be drained from the crankcase, the lubricant should be removed from the timing gearcase as well as from the gearbox and differential. When this is done it gives an opportunity of examining the parts to see if any troubles are developing. An examination of the timing gears may show if they are meshing properly, and if not the cause of unnecessary motor noises may be discovered. If particles of the metal have found their way into the lubricant during the past season this is a sure way of removing them. What applies to the timing gears also applies to the gearbox and differential. After thoroughly cleaning these gearcases the necessary new supply can be added. Hand in hand with the replenishing of the lubricant is that of noting where leaks have occurred during the past season.

BEFORE dismissing the lubrication feature of overhauling, attention is directed to cleaning the mud-apron. Frequently this becomes covered with heavy lubricant which has worked out past the bearings, and this stops up all escape for gasoline which might drip into the pan when flooding the carbureter. Serious fires have resulted because of such conditions. The mud-apron should not only be thoroughly cleaned before the car is taken out in the spring but it should also be periodically cleaned during the season when the car is in operation. This is a good protection against fire.

THE importance of proper lubrication cannot be impressed too greatly upon the car owner. If the lubricating system is inadequate very serious results may follow. Not sufficient lubricant may cause a bearing to seize with the result that a connecting rod may be broken or a cylinder casting damaged. It is impossible to state just how great the loss may be due to lack of lubricant. Compared with the lubrication system the ignition or carbureter ones are simple in that they rarely give rise to such serious difficulties. Should a carbureter fail to work there is little danger of scoring a cylinder casting or breaking other parts. The most that can result is a lack of power and perhaps over-heating, both of which are quickly detected. Compared with this the troubles that may result from inadequate lubrication are very serious, and the car owner must always bear this in mind; not only should he start the season with an adequate supply of lubricant but he should also see to it in his overhauling in the spring that all of the parts especially in need of lubricant are in the best possible condition. In this connection he should examine the piston rings to see that there are not any broken one or that their usefulness is not being impaired by the presence of carbon.

IN looking over the running gear a careful test should be made of the brakes and steering gear parts. These are two features of the car on which the safety of the passengers depends, and as such they should receive early consideration. It is not sufficient to simply adjust the brakes before taking the car out, but they should be given a thorough practical road test to determine if each set is adequate. In the steering gear the same inspection is necessary on the part of owner or repairman.



# February Big Month in Export Trade

WASHINGTON, D. C., March 31—Motor car exports more than doubled in number and value in February last as compared with the same month of 1911, according to the figures made public today by the federal bureau of statistics. The number of cars shipped abroad in February last was 2,403, valued at \$2,274,489, while the number exported during the corresponding month of last year was 1,023, valued at \$1,075,670. During the 8 months' period these exports increased from 5,840 cars, valued at \$6,920,892, in 1911, to 12,347 cars, valued at \$12,064,383, in 1912. Exports of parts, except tires, likewise show big increases, the value increasing from \$214,218 in February, 1911, to \$345,965 in February last, and from \$1,277,342 to \$2,426,264 during the 8 months' period.

Cars were exported to the following countries during February, 1912, and the 8 months ended February:

FEBRUARY		
Exported to—	No.	Value
United Kingdom .....	664	\$ 534,398
France .....	43	39,221
Germany .....	16	10,088
Italy .....	13	13,500
Other Europe .....	106	81,714
Canada .....	747	774,270
Mexico .....	33	44,737
West Indies and Bermuda...	29	42,433
South America .....	143	211,183
British Oceania .....	428	334,831
Asia and other Oceania.....	119	119,185
Other countries .....	62	68,929

EIGHT MONTHS ENDING FEBRUARY		
Exported to—	No.	Value.
United Kingdom .....	3,768	\$2,988,146
France .....	243	219,734
Germany .....	89	66,651
Italy .....	96	72,173
Other Europe .....	572	485,175
Canada .....	2,704	3,249,338
Mexico .....	236	359,972
West Indies and Bermuda...	195	214,113
South America .....	1,050	1,273,040
British Oceania .....	2,536	2,253,547
Asia and other Oceania.....	611	634,284
Other countries .....	247	248,210

The exports of tires for motor cars increased in value from \$179,047 in February, 1911, to \$267,036 in February last, and from \$1,194,720 to \$1,641,373 during the 8 months' period.

Slight increases in the imports of cars as well as in parts, except tires, were made during the periods under consideration. In February, 1911, the number of cars imported was forty-one, valued at \$104,924, with parts valued at \$16,716, while in February last the number increased to seventy-three, valued at \$166,048, with parts valued at \$29,241. During the 8 months' period the number of cars imported increased from 586, valued at \$1,250,144, in 1911, to 717, valued at \$1,572,376, in 1912. The imports of parts decreased from \$212,245 to \$212,192 during this period.

The following table shows the imports of cars and countries of origin during certain periods:

FEBRUARY				
—1911—		—1912—		
Imported from—	No.	Value	No.	Value
United Kingdom...	10	\$ 30,158	21	\$ 45,278
France .....	21	46,813	40	101,696
Germany .....	1	2,856	4	4,854
Italy .....	2	4,050	6	9,818
Other countries....	7	21,047	2	4,402

## More Than Twice as Many Cars Shipped as in Same Month Last Year

### EIGHT MONTHS ENDING FEBRUARY

Imported from—	—1911—		—1912—	
	No.	Value	No.	Value
United Kingdom...	78	\$182,319	151	\$337,854
France .....	278	574,132	263	647,292
Germany .....	77	174,038	96	209,036
Italy .....	99	188,192	107	157,461
Other countries...	54	131,463	100	220,733

### AMERICAN EXPORT BUSINESS

New York, April 1—O. G. Bennet, vice-president of General Motors Export Co., who has just returned from an European trip, speaks interestingly of the progress made by American companies in exploiting their product in England and other foreign countries.

"There has been so much optimistic talk of late," he says, "in regard to our export trade in motor cars that it is time the conditions as they exist should be known. It is true that the number of cars shipped from here is steadily increasing, but analysis of the situation develops that our increase in business during the past few months has been mostly with England.

"The careless indifference on the part of the American manufacturer to the Eng-

lish market during the past few years, seems to have been supplanted by a wild rush for business in that country. In consequence, the pendulum has swung so far in the other direction that as much harm may be done to American trade during the next few months by the over-stocking of goods, as was ever done by neglect in the past.

"The English market consumes in the neighborhood of 40,000 medium-priced cars yearly, so the total number shipped from the United States makes a small percentage. The number of Englishmen, who will buy an American car and be willing to have their friends know it, is growing constantly. As far as I have been able to ascertain the number of shipments now taking place are not orders but consignments. In some instances, dealers have small deposits on a number of orders, but most of these cars are awaiting purchasers."

### ROAD NEEDS OF COUNTRY

Washington, D. C., March 31—That the nation-wide movement for the improvement of the public roads involves a large undertaking is indicated by information just made public by the United States department of agriculture. Secretary Wilson shows that 300,000 miles of road must be improved before the public road system can be considered really efficient.

It is only within recent years that the movement for better roads has gained force. The consequences of delay are shown in the fact that there are now but 190,476 miles of improved roads in this country. These improved roads constitute 8.66 per cent of the total mileage of all public roads, improved and unimproved. It is figured that the percentage will have to be increased to 20 before traffic can be moved throughout the country with the minimum of wear and tear on motor cars, horses and wagons.

The French system of roads, long considered the best in the world, was bonded by Napoleon III for \$6,000,000 and something in the neighborhood of \$612,775,000 has already been spent on that system. In this country, owing to the great distances, it is probable that close to \$2,000,000,000 will have to be spent before a proper road system is developed. While the amount necessary to perfect a great road system seems fabulously large, it does not seem so large when it is divided among the various states and spread over a period of 5, 10 or 15 years. When it is considered that New York state has bonded itself for \$50,000,000 and that \$5,000,000 a year is now being expended by that state, it will be seen that a nation-wide system might soon be perfected were all states to progress as rapidly.



- April 20—Hill-climb; Atlanta, Ga.
- April 27—Speedway race; Los Angeles motordrome; Los Angeles, Cal.
- May 4—Road race; Motor Car Dealers' Association; Santa Monica, Cal.
- May 14-17—Commercial reliability run Chicago Motor Club, Chicago, Ill.
- May 17-18—Track meet; Colorado State Automobile Association; Denver, Colo.
- May 30—Indianapolis speedway, 500-mile race; Indianapolis, Ind.
- May 30—Track meet; Salem, N. H.
- May 30—Track meet Rockingham park; Salem, N. H.
- June 20—Algonquin hill-climb, Chicago Motor Club; Algonquin, Ill.
- June—Reliability run; Auto Club of St. Louis, St. Louis, Mo.
- June—Hill climb; Maine Automobile Association; Portland, Me.
- July—Road race; Riverhead, L. I.
- July 4—Track meet; Petersburg, Ind.
- July 4-5—Track meet; Taylor Automobile Club; Taylor, Tex.
- July 4-6—Beach meet; Old Orchard Automobile Association; Old Orchard, Me.
- July 10-20—Canadian Industrial Exhibit; A. C. Emmett, manager motor section; Winnipeg, Can.
- July 15—Reliability run; Wisconsin State Automobile Association; Milwaukee, Wis.
- August 8-10—Galveston beach meet; Galveston, Tex.
- August 23-24—Road races; Chicago Motor Club; Elgin, Ill.
- October 5—Fairmount Park road race; Quaker City Motor Club; Philadelphia, Pa.
- September 2—Speedway meet; Indianapolis, Ind.
- September Track meet; Universal Exposition Co.; St. Louis, Mo.
- October 7-11—Chicago Motor Club reliability run; Chicago.
- October 12—Track meet; Rockingham park; Salem, N. H.
- November 6—Track meet; Shreveport Automobile Club; Shreveport, La.



OPTIMA, ONLY LIMOUSINE TO FINISH

BENZ TEAM IN THE TOUR

## French Pleased With Tour Results

PARIS, March 22—Out of fifty-two-light cars starting in the tour of France, thirty-seven finished the journey of 2,500 miles without penalization, and of the ten voituresses entered in the \$800 class, three were present at the end. Officially none of the American cars finished, for the three Fords were disqualified for changing their wire wheels in order to get a lower gear ratio for crossing the Alpine roads, and the Reo, piloted by the veteran race driver, Gabriel, skidded on the car lines and was unable to get into one of the controls on time. All four, however, were present at the finishing point, having covered the entire distance with apparent ease. The two-seated Hupmobile, which set out with only one man aboard, disappeared after covering about half the distance.

### Winners of the Tour

The firms having accomplished the tour without the loss of a car were Barré, Benz, Hurtu, D. F. P., Corre La Licorne, Pilain, Bozier, Turicum, Bugatti, Star, Stimula and Roy. Those having one car eliminated were Crespelle, Aleyon, F. L.,

### Affair Just Finished More in Nature of Demonstration Than Contest and Results Are Expected in Way of Increased Business—Small Cars Make Big Impression

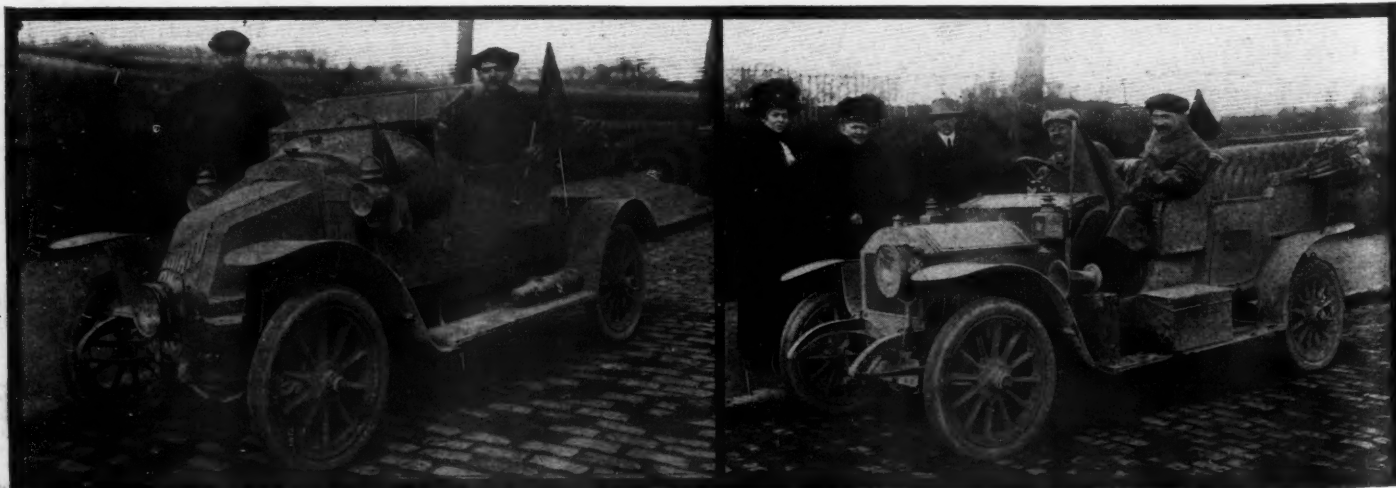
Schneider, C. I. D. valveless and Delage.

The tour revealed an entire absence of motor trouble, not a single car being eliminated by reason of its engine failing to do the work. The weakest point was found to be the suspension, and in some cases the breakage of the springs led to rear axle troubles. Evidently it is this matter more than any other which needs perfecting in the modern light car. Tires gave wonderfully good service, notwithstanding very bad roads, a maintained speed of practically 30 miles an hour, and heavy loads. About one dozen cars got through without having to touch their tires, and still more with only one puncture. Several cases could be mentioned of teams of three cars which totaled but two punctures amongst them. In view of the little trouble experienced it hardly seemed necessary to make the conversion from wood to detachable wire wheels car-

ried out by both the American and European cars.

All the manufacturers express themselves as satisfied with the number of cars sold as the result of this competition, for it was understood that the tour was intended more to stir up enthusiasm among the buying public than to test the cars to the utmost. Every provincial center had the opportunity of inspecting the most complete selection of light cars—four-cylinder models of 3 to 4 inches bore—ever sent out of Paris, and they did not neglect the opportunity to place orders.

The real novelties of the tour of France were to be found in the voiturette section. It cannot be denied that there will be an enormous boom in both France and England, during the next few years, in light cars selling from \$500 to \$800 complete. Such a car must cost very little more to maintain than a motor cycle, and in order

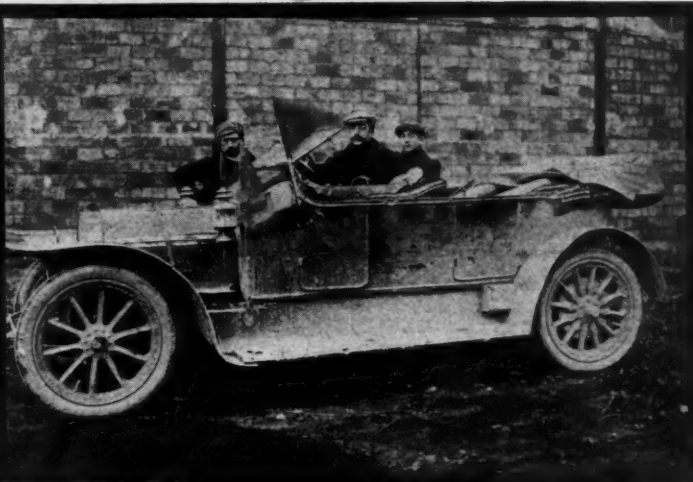


HURTU LIGHT CAR ONE OF WINNERS

SIMPLICIA, CAR OF REMARKABLE CONSTRUCTION



BOZIER TWO-PASSENGER CAR



LIONEL DE DION IN C. I. D. MOTORED CAR

# Thirty-Seven Finish Without Marks

More Than Half Have Perfect Scores—No Americans in Perfect Score Category, Ford Team Having Been Disqualified and Others Meeting With Hard Luck

to get at the low price for production and maintenance European engineers are convinced that they will have to make very radical departures from the usual big car practice. Up to the present this class of car has been left in the hands of the small makers, the only exception being the Peugeot company, which is now making arrangements for producing a huge series of \$450 cars. In the tour of France all the two-seaters developed from the motor cycle proved unable to stand the strain. The three winners, although of entirely distinct classes, were all simplifications of the big car rather than complications of the motor cycle.

**Some of the Cars**

The Ponette was the most orthodox. It had a four-cylinder motor 2.5 by 3.1 inches bore and stroke, three-speed gearbox, shaft-drive and live axle without a differ-

ential. Its two passengers were carried side by side, and altogether the vehicle was a simplified car.

The Sphinx had a 4 by 4.7 single-cylinder Aster motor in front, transmission by a long flat belt to a jackshaft with two gears by means of dog clutches, and final drive by a single chain to a rear wheel. The car had a narrow track, no differential, and in order to give elbow room the driver was set slightly ahead of the passenger. The car came through in excellent condition and was able to maintain the same average as the full touring models.

Unlike the other two, the Dumond was a four-passenger car, with really plenty of room for the four persons aboard, and being well raised off the ground had all the appearance of a big car. It also was the most original from a mechanical standpoint. Forward, under a bonnet, was

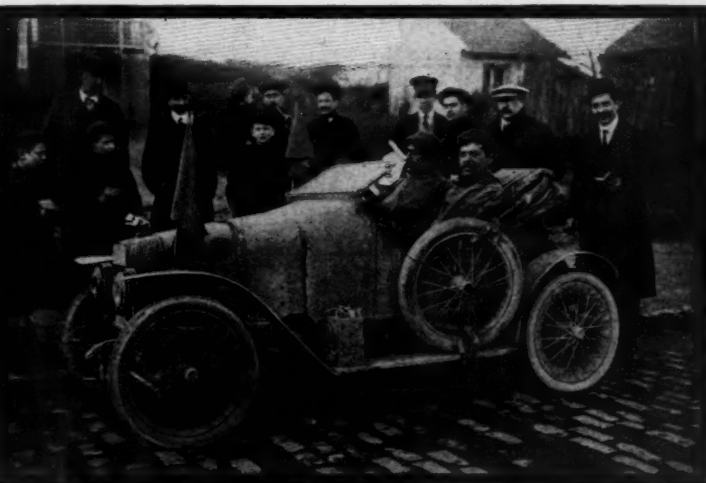
a single-cylinder motor of 3.5 by 6.6 inches bore and stroke set across the frame. Its only peculiarity was exceptionally large diameter valves. Ignition was by high-tension magneto, cooling by thermo-syphon, and lubrication by splash. The motor was more silent than most four-cylinders, and remarkably free from vibration.

**Mechanical Features**

On each end of the main shaft, at right angles to the longitudinal axis of the car, was a large diameter friction plate, and in contact with each plate was a fiber-faced wheel mounted on the squared portion of a propeller shaft. Each shaft was carried directly rearwards, to drive one of the road wheels by means of bevel gearing contained in a housing. The power was thus transmitted directly from the motor to each road wheel independently through a friction plate and a pair of bevel gears. The propeller shafts being about equal to the length of the wheel-base, practically 80 inches, there was no necessity for universal joints, and of course no need for a gearbox and differential.



DUMOND, ONE OF FEATURES OF TOUR



PONETTE, FOUR-CYLINDER VOITURETTE

# Milwaukee Asks for Big Road Races

MILWAUKEE, Wis., April 1—Formal application for the right and sanction to run off America's greatest motor classics, the races for the Vanderbilt and the grand prix, at Milwaukee next fall has been filed with the various organizations associated with and related to the conduct of the contests by the Milwaukee Automobile Dealers' Association.

When announcement was made last week that the Milwaukee Automobile Dealers' Association intended to make a bid for the big contests, even Milwaukee people were skeptical of the ability of the organization to undertake the enormous task. Today not only Milwaukee, but the entire middle west is convinced that in this city there is the power to carry the undertaking to a most successful conclusion.

## All Milwaukee Interested

It is the greatest and most monumental undertaking that Milwaukee has ever attempted and all forces, such as the Milwaukee Automobile Club, Merchants' and Manufacturers' Association, Citizens' Business League, Greater Milwaukee Association, Chamber of Commerce, City Club and others have been joined together in one grand effort to make it a success. Big business men, the manufacturers, the professional men, and big citizens of all classes have come forward with offers of any amount of money to swing the deal.

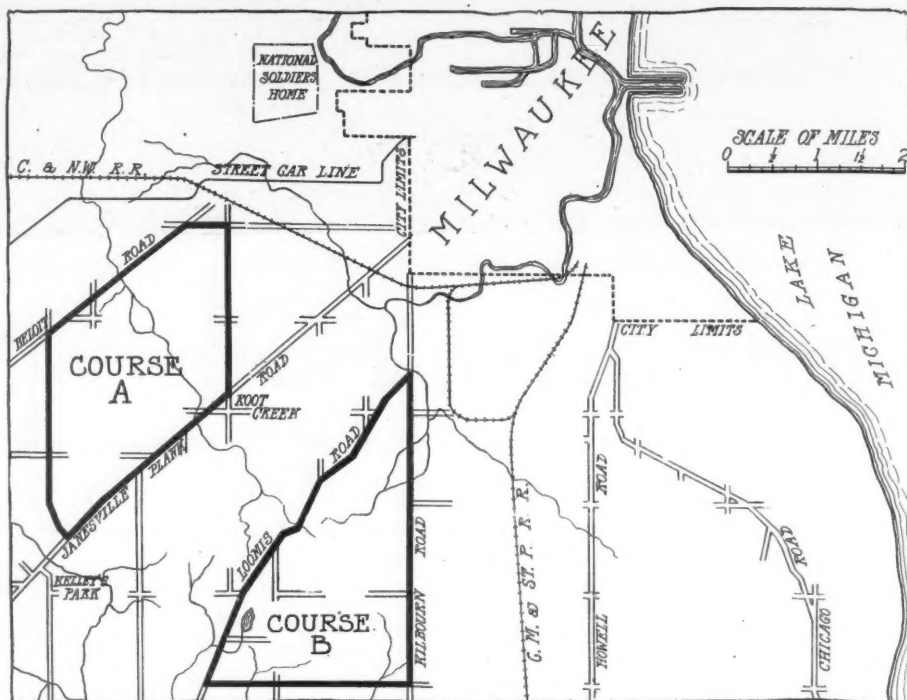
Chicago, Detroit, Kansas City, Denver, Indianapolis, Cincinnati, Cleveland, Minneapolis, St. Paul, Des Moines, Omaha and a score of other cities have wired, "You have our cordial support in the undertaking." The Chicago Motor Club has adopted resolutions offering Milwaukee every iota of support and co-operation it can command.

When the Milwaukee A. D. A. went to big business men to ask for backing, the question was answered, "How much do you want?" Colonel Gustav Pabst, the millionaire brewer, has opened his purse to them and will doubtless hang up a trophy valued at from \$10,000 to \$15,000 for a third free-for-all race to be run in connection with the Vanderbilt and grand prix.

The Milwaukee Hotel Keepers' Association has been among the first to get to work on problems relating to the conduct of the races and has given assurance that the city's hotels can take care of a crowd 25 per cent greater than Savannah or any other city, barring only New York and Chicago.

The choice of race courses, which was a wide one from the very start, has narrowed down to two splendid stretches in the town of Greenfield, Milwaukee county, only a few miles from the center of the city. The M. A. D. A. is now dealing only with the one township, Greenfield,

Formal Application Made for Grand Prix and Vanderbilt—Chances Good for Third Event for Pabst Cup—Two Courses Now Being Given Consideration



TWO COURSES MILWAUKEE IS CONSIDERING.

and announces that the authorities have assured it the most cordial support. No obstacles are in the way for the actual running of the contests.

The two courses are but  $1\frac{1}{2}$  miles apart. The now preferred course lies almost entirely within the township, there being only  $\frac{1}{2}$  mile or less running along a township line. The other course has two legs running along town lines and is less preferable because of its shape.

## Two Courses Considered

Course A, known as the Janesville-Beloit road route, is diamond-shaped, the opposite legs in each instance being parallel. This shape gives but four curves, none being less than 90 degrees. It will be necessary to change but one curve, the lower corner, which can be rebuilt without the slightest obstacle. The entire turn is an orchard, the owner of which has given permission to cut through it to make a curve of 750 to 900 feet. The course measures 10.7 miles on unofficial meter reading.

Course No. 2, a mile east of the preferred course, is triangular in shape, the hypotenuse thereof being slightly tortuous and the base and side being practically a straight line, as they run along township lines. This course measures approximately 12.2 miles. It has five or six culverts crossing small creeks. Course No. 1 has but two culverts.

One feature of the preferred course is that the Janesville plank road leg is part

of a boulevard to be constructed under state aid by the county of Milwaukee this year. Condemnation proceedings have already been instituted. The road will be 150 feet wide. The longest leg of course No. 2 is along the Kilbourn road, which is part of the proposed improved Chicago-Milwaukee highway, to be worked upon by the Chicago-Milwaukee Good Roads Association this year.

The contour of both courses is slightly rolling, with no hills but several long inclines which will need but little grading. It will cost from \$7,500 to \$12,000 to rebuild the roads in each course, no matter which is selected.

## OLDFIELD'S SENTENCE SHORTENED

New York, March 31—The contest board of the American Automobile Association has decided that the disqualification of Barney Oldfield and Ben Kerscher shall expire April 30, 1912, instead of July 1. W. H. Pickens, Oldfield's manager, will be in good standing July 1, 1917.

## DISBROW CUTS MILE RECORD

Los Angeles, Cal., April 1—Louis Disbrow, driving the Jay-Eye-See, his special, said to be the old Fiat racer Strang used to drive, is reported to have lowered the 1-mile dirt track record of :48.62, held by Burman at Brighton Beach last fall, to :38%, equal to 93.26 miles per hour. The drive was made today at San Diego.

# New Jersey Passes Reciprocity Bill

Senate Re-considers Its Action and Governor's Signature  
Makes it a Law—Registration Fees Are Increased, and  
State Will Profit to Extent of \$200,000 Yearly

TRENTON, N. J., April 2—The Stickel bill, giving motor reciprocity to New Jersey, has passed after all and became a law today when it was signed by Governor Wilson. Seemingly defeated last week, the senate experienced a change of heart and reconsidered its action last Wednesday night, which was followed by the lower house concurring. In passing through the senate an amendment was tacked on raising the rates of registration 50 per cent, which will give New Jersey an added revenue of about \$200,000 a year from the motorists.

This will give New Jersey a law that ranks with Connecticut's and Vermont's and which, it is expected, will so encourage tourists to visit the state that the Jerseyites can count on about 110,000 cars coming in during a year, which will mean a gross expenditure of nearly \$6,000,000, it is calculated.

The tenor of the Stickel bill is distinctly reciprocal. The measure is in ten sections, the gist of which is as follows: Registration is required except where special regulation is made to cover non-residents. All registrations expire with the end of the calendar year, but 31 days' grace are granted.

The rating of horsepower will be made according to the S. A. E. formula, which regards only the bore of the motor cylinders based upon an engine speed of 1,000 revolutions per minute.

Three classes are provided, namely: Cars of 10 horsepower or less, for which the fee is \$4.50; cars of from 11 to 29 horsepower, for which the fee is \$7.50, and cars over 30 horsepower, \$15. In addition motor trucks weighing unloaded over 4,000 pounds shall pay a fee of \$10 more than its horsepower rating. Provision for half the above rates of fees is made where registration takes place after September 1 in any year.

Authority is given to the commissioner of motor vehicles to refuse to register a car that does not comply with the requirements of the law or which may seem unsuitable for use on the roads, in his opinion.

Sale of a car nullifies the license, but if application is made by the purchaser with payment of \$1 as a transfer fee, the commissioner may validate it.

Any car owned by a non-resident which is lawfully registered in his home state in compliance with the law covering the operation of motor vehicles and duly displaying its registration numbers, may be driven in New Jersey for 15 days in each calendar year, divided any way to suit the

wishes of the owner, without registration fee or charge of any kind, provided that the state in which the car is registered grants equal privileges to the owners of cars registered in New Jersey. In case a smaller privilege is allowed to New Jersey residents in a certain state, the limits established by the laws of that state shall govern its own citizens while in New Jersey.

The same provisions are made for registration of chauffeurs. They need no registration in New Jersey if the law of their home state does not require non-resident chauffeurs to be registered.

## WHITE ENTERS 500-MILE RACE

Indianapolis, Ind., April 1—The entry of a six-cylinder White has been made in the 500-mile race on May 30. It is not a factory entry, the nomination being made by the White Motor Car Co., of Indianapolis, local agent. W. Barndollar is to drive. The White makes the fourteenth car entered, while there are ten others that have been made tentatively. Those actually in are two each of the Stutz, National, Mercedes, Case and one each of the Fiat, Lexington, Cutting, Simplex, Knox and White.

## SANTA MONICA ENTRIES

Los Angeles, Cal., March 30—So far there have been three Fiats, two Benz, a Mercedes, Isotta, five Stutz, two Mercers and two Nationals in the free-for-all road race that is to be run over the Santa Monica course on May 4. In the small-car race for the Jepson trophy it looks as if there will be two Buicks, a Schacht, Halladay, Marathon, an E-M-F, two Cases, a Reo, Cutting and Regal, while it is hoped to get an Ohio, a Velie and a Mitchell six.

## FRESNO BILLS ROAD RACE

Fresno, Cal., April 1—The Republican, a daily newspaper here, has announced a road race for April 21, to be run over a distance of 197.2 miles. There will be four classes, according to price, and a free-for-all: There will be no entry fee charged, the lists closing April 10. It will be a local meet and will be unsanctioned.

## DR. DUTTON CHOSEN

St. Paul, Minn., April 1—At the annual election of the Minnesota State Automobile Association officers were chosen as follows: President, Dr. C. E. Dutton, Minneapolis; vice-president, Samuel Gibeau, Red Lake

Falls; E. L. Thornton, Benson, and A. W. Strong, Minneapolis; treasurer, J. K. Martin, Little Falls; secretary, G. Roy Hill, secretary of the Automobile Club of Minneapolis. Of the thirty-two clubs in the association twenty-four were represented by thirty-six delegates. The membership today is 2,473.

## NEW YORK BARS CUTOUT

New York, April 3—Special telegram—By a solidly unanimous vote the aldermen of New York passed the muffler cutout ordinance yesterday afternoon, prohibiting the use of that device within the metropolitan limits and providing a fine for disobedience. It was demonstrated to the board that the cutout served very little purpose, especially in the city, and was a nuisance to nearly all the residents. The Automobile Dealers' Association, Touring Club of America and other organizations were active in advocacy of the ordinance. The measure now goes to Mayor Gaynor for approval or veto, the former course being practically assured.

## NEW CONTEST RULES OUT

New York, April 3—Special telegram—The contest board of the A. A. A. has completed its revision of the contest rules for the 1912 season, governing all forms of contests, such as road, speedway, mile and ½-mile track races as well as all forms of reliability contests, hill-climbs, etc.

In general the rules remain much as in 1911, but many important changes have been made. A few of these are as follows: In meets on mile and ½-mile tracks it is now imperative to remove the top rail from the inner fence of the track and to establish a neutral zone on either side of the track from which spectators are barred. This zone is 40 feet wide at the end curves and 30 feet on the straight-aways.

In all forms of contest the minimum weight clause has been eliminated so that in stripped stock chassis events the piston displacement classification remains as the only restrictions. The chassis options permitted a year ago are continued.

In all forms of contests added powers are placed in the hands of the referee, who may now in addition to terminating a race before its scheduled finish delay it at any time because of disaster in conjunction with grandstands, etc.

The flag code has been standardized so that it is now the same for road races and track meets. The red flag means clear course, yellow flag blocked course; white flag, stop next lap; and green and checkered flags for last lap and finish.

The number of cars permitted to start in any track meet is limited to one for every 400 feet of linear track measurement.

# Winter Fails to Dampen Iowa's Ardor

Spring Finds Hawkeyes Just as Interested as Usual in Good Roads—New Associations and Clubs Springing Up for Purpose of Booming Betterment of Highways—Progress of Work

**C**EDAR RAPIDS, Ia., March 30—The past winter has in no way stayed the impetus given to good roads by motor clubs and good roads associations last year which put the entire state of Iowa in a fever heat over the question of road improvements and with new associations and clubs forming all over the state to carry on the work for 1912, Iowa will leap into the front rank of good road states.

Even with the completion of the organizations embracing the five associations controlling the remarkable highways across the state which includes, beginning on the north, the Hawkeye highway and then going south successively the Transcontinental highway or better known as the White Post road, the River-to-River road, the Blue Grass road and the Waubansie trail which was started last season, the officials of the various associations feel that the good roads work has only begun and steps are being taken to improve each and every road more than ever this season.

On the north road the Hawkeye highway the same road betterment competition of last season will be continued. So effective was this competition that nearly every mile of the road was improved to a remarkable degree in a short time and experienced road men say they have seldom if ever seen a country road developed into boulevard conditions in so short a time. This same spirited competition will tend to make the road better than ever.

On the White Post road under the guidance of W. C. Coan, of Clinton, Iowa, who is the father of the road the details of signboarding and striping of the telephone poles marking the road will be finished. This road has the reputation of being the easiest road to follow in the state of Iowa and being practically an air line route from the Mississippi to the Missouri is one chosen by nearly all transcontinental tourists. A number of changes are contemplated in the route and it is believed that considerable distance can be cut off.

The River-to-River road from Davenport is to undergo a great deal of improvement. The stretch extending west from Davenport for 25 miles which was originally a macadam road was allowed to go to pieces. An appropriation has been made which will completely rehabilitate the road in Scott county. Westward the road will remain the same and the well known dragging system used almost daily will be supplemented by side road drainage on the level roads and along the hill roads.

The Blue Grass Road Association under the direction of E. Corsepius of Fort Madison is planning still bigger things. The officials have held several conferences with the farmers along the route and through the efforts of various speakers on good road subjects a tremendous amount of enthusiasm has been stirred up. All the old wooden culverts have been slated for the discard, grades are to be lowered and strong and finely built cement culverts will be erected this spring. Farmers along this road are anxious to get the big good roads prize this season. The Burlington motorists, who are a part of this association are doing more than their share of planning for the campaign which will soon open and have offered prizes in connection with the regular remuneration for work on the roads and it is expected that their western stretch of road will be in the list for a prize. Connecting Burlington with Fort Madison a new road is to be built which will connect with the new boulevard being built south along the river to Keokuk. From this point which is the start of the Waubansie trail unusual efforts are being made to keep up the reputation established last season. Permanent road committees have been named which will have full charge of the road for years to come. Enthusiasm along this road was stirred up at a recent meeting when Henry Wallace speaking at a meeting of the Iowa association of farmers' clubs informed the members that if they would quit thinking of farms and motor cars, etc., in \$100 bills instead of thinking of roads and road improvements in 5 and 10-cent pieces they soon would have good roads.

The state road commission is lending all sorts of assistance in the work sending good roads experts and lecturers around to explain the work and it is enthusiastically expected that 1912 will see Iowa far ahead in the way of good roads.

## PITTSBURGH'S ROAD PLANS

Pittsburgh, Pa., April 1—Allegheny county will spend more than \$400,000 this summer in the construction of new roads, this district already having more improved roads than any other of its size in the world, it is said. The county commissioners have passed resolutions for the work, which will be begun as soon as possible. The construction of the roads is made possible by the passing by the last legislature of a law which allows the building of county roads through boroughs, with the consent of the borough councils. More

than 1,000 men have been engaged for the work. The estimates of the costs have been made by the county engineer. Where the roads run through boroughs, the county will pay two-thirds of the expense and the borough the rest. Most of the county's expense will be paid through the issue of bonds. Petitions for the improvement of a number of the roadways have already been filed and will be heard by the grand jury on April 14. The work will then be begun immediately.

## QUELLS AMATEURS' ENTHUSIASM

New Orleans, La., April 1—In order to save useless work and expense a circular has been issued from the office of the governor of Louisiana, which will be sent to every township in the state, warning against the danger of failure in amateur road building. The good roads movement has become so popular that something is being done in nearly every parish in the state to improve the highways. In some cases considerable work and expense have been incurred without improving the highway due to the lack of experience of those in charge of the work. The governor urges that competent advice be sought before any work is done. The railroads have a number of engineers who are devoting their time to answering calls from different sections of the state where roads are being constructed. The state is planning to hire several experts who will be sent to direct the work at any place where professional supervision cannot be secured. No charge is made for this service.

An effort is being made to complete the last stretch of road necessary to connect New Orleans with the improved highway running west from Atlanta, Ga., to Pearlinton, Miss. A fine shell road runs eastward from New Orleans to Chef Menteur, a distance of 30 miles. The 60 miles between this point and Pearlinton lays through low country and the difficulties of construction are such that previous attempts to secure a roadway have been discouraged. A fund of \$1,500 for the preliminary survey has been raised. As several bridges will have to be built the expense of the construction will be heavy.

One of the bridges will have to be erected by the war department at Fort Pike. The rigolets at this point are wide and the bridge will be long but the department has stated previously that the bridge would be built when a permanent roadway to New Orleans was constructed. Another long bridge will have to be built across the Jordan river, in Hancock county, Mississippi. This road will be of the greatest importance to motorists in New Orleans as it will provide a direct route to the coast summer resorts at Biloxi, Gulfport, Pass Christian and Mississippi City.

That Duluth is planning to secure south

# Congressmen Line Up for Good Roads

tourist business in the summer by working in the interest of a motor road that will connect New Orleans and that city following the picturesque route along the Mississippi river, has caused general satisfaction here. This city will be ready to cooperate in the movement as the good which would result to Duluth in the summer time would be the same to New Orleans in the winter. It is planned to use the crown of the levee from here to Vicksburg, which will result in one of the most scenic roads in the entire country.

## MILLION FOR DOMINION ROADS

Ottawa, March 30.—The highways bill will become law this session despite the attitude of the senate. The government does not expect serious interference by the upper house, and the million-dollar appropriation provided for in the supplementary estimates will be appropriated this year. It now remains for the several provinces to pass the necessary legislation under which the money will be turned over. The system under which the money is to go to the provinces requires concurrent legislation as between the provinces and the Dominion, and it is for this legislation that the federal authorities will have to wait before the money to be voted can be distributed.

## ASKS DOMINION AID

Ottawa, March 30—Asking federal aid for the proposed King Edward highway from Montreal to Rouse's Point, a delegation saw the prime minister Thursday. Letters approving the naming of the highway after King Edward were presented from his majesty, the Duke of Connaught and many distinguished people. It was urged that the roadway as proposed to be built by the Quebec government being but 16 feet wide, is too narrow, while the water-bound macadam to be used would be too dusty. Bituminous macadam was suggested instead, along with an increase of width to 25 feet.

## GOOD NEWS FROM MICHIGAN

Grand Rapids, Mich., April 2—Kent county has voted to bond for \$600,000 for good roads. Ottawa county also votes to bond for \$600,000 for the same purpose.

## TROUBLES OF GENERAL DU PONT

Wilmington, Del., April 1—While T. Coleman duPont is encountering obstacles in his effort to build a boulevard the entire length of the state of Delaware, he expects to overcome them all and complete the project within a reasonable time. He says if the legislature will continue in extra session this spring and amend the boulevard law so as to simplify condemnation proceedings, provide for building a bridge over the Chesapeake & Delaware canal, and enable him to branch out to the lower part of the state, so as to build two roads for part of the distance, so he can

## Representative Schackleford Has Twenty-Eight of His Colleagues Back of Him in Effort to Put Through Bill Which is Said to Contain Strong Features of All Other Measures Recorded

WASHINGTON, D. C., March 30—The introduction of a bill in congress by Representative Shackleford reveals the fact that twenty-eight members of congress, each of whom is the author of a good roads bill, have agreed to support the measure framed by Representative Shackleford. This bill is said to contain the good points of the various bills. The twenty-eight members, constituting a formidable good roads fighting body, held a conference and decided so long as the house had before it a great number of bills on this subject, the likelihood of legislation was remote. The Shackleford bill provides as follows:

For the purpose of this act certain highways of the several states, the civil subdivisions thereof, and companies incorporated under the laws of the several states are classified as follows:

Class A shall embrace well-graded roads outside of incorporated cities, towns and villages and not less than 1 mile in length, upon which the steepest incline shall not exceed 5 per centum wherever practicable, not less than 25 feet wide between the ditches, well drained, with a wagon way or road track not less than 12 feet wide, composed of bituminous macadam, brick, or of macadam, not less than 6 inches thick, rolled, bounded and maintained with a smooth, firm surface, both shoulders and roadway properly constructed and continuously cared for.

Class B shall embrace well-graded roads outside of incorporated cities, towns and villages of not less than 1 mile in length, upon which the steepest incline shall not exceed 5 per

centum wherever practicable, 25 feet wide between the side ditches, well drained, with a wagon way or road track 12 feet wide, composed of burnt clay, shells, sand, clay or gravel, not less than 8 inches thick, continuously kept well compacted, and with a firm, smooth surface, with roadway well and properly crowned, so as to quickly shed water into the side ditches.

Class C shall embrace roads outside of incorporated cities, towns and villages of not less than 1 mile in length, upon which the steepest incline shall not exceed 5 per centum wherever practicable, which shall be kept well graded, crowned and drained to a width of not less than 18 feet, with split-log drag or other similar means, so as to be reasonably passable for wheeled vehicles at all times.

Section 2—That whenever the United States shall continuously use any highway of any state, or civil subdivision thereof, or of any company incorporated under the laws of any state, which fall within classes A, B or C, for the purpose of transporting free rural delivery mail, compensation for such use shall be made at the rate of \$30 per annum per mile for highways of class A, \$20 per annum per mile for highways of class B, and \$10 per annum per mile for highways of class C. The United States shall not pay any other compensation or toll for such use of such highways than that provided for in this section, and shall pay no compensation whatever for the use of any highway not falling within classes A, B or C.

Section 3—That the director of roads in the department of agriculture shall determine the class, if any, into which any road shall fall, and his determination upon that subject shall be final.

Section 4—That the compensation herein provided for shall be paid at the end of each fiscal year by the treasurer of the United States upon warrants drawn upon him by the postmaster general to the officers or persons entitled to the custody of the funds of the respective highways entitled to compensation under this act.

Section 5—That this act shall go into effect on the first day of July, 1913.

complete the whole project within a year.

Believing that there has been some misconception of some of his plans, he is engaging in a campaign of education, and through the newspapers is making his plans clearer than formerly, besides publishing letters from persons who have written to him indorsing the project.

The most serious trouble appears to have been encountered in the 7 miles between Wilmington and the Pennsylvania state line, and in order to ascertain the feeling there and to explain any letters which might not be clear, Mr. duPont last Thursday night addressed a mass meeting of farmers in that section of the state, which was attended by between 150 and 200 persons. At the conclusion of the meeting a vote was taken, when thirteen voted in favor of the proposed amendments and nine against them, a large number not voting at all. The outcome of the present situation is in doubt, but the building of the road in the lower part of the state is under way and Mr. duPont believes he will ultimately overcome the major portion of the opposition, which appears to be due to the fact that some of the land owners fear they will not be sufficiently compensated for their land, and also be-

cause some of the municipalities are objecting to bearing a portion of the cost of the road passing through the towns.

The latest estimate of the cost of the project to Mr. duPont is from \$2,500,000 to \$3,500,000.

## PENNSYLVANIA'S BIG ROAD FUND

Pittsburgh, Pa., April 1—The state highway commission held a conference with State Auditor General Sission Wednesday regarding road improvement in the state during the summer. It is believed that about \$9,000,000 will be spent in roadway construction, of this amount about \$3,000,000 being received from motor car owners through license fees.

## DETROIT DEALERS ELECT

Detroit, Mich., April 2—The Detroit Automobile Dealers' Association held its annual meeting at the Log Cabin inn, north of the city, last evening. The affair opened with a banquet, covers being laid for 110. At the business meeting which followed, the following officers were unanimously elected: President, W. F. D. Newmann; vice-president, H. D. Moran; secretary, Joseph Schulte; treasurer, Clifford Starkweather; additional director, Paul McKenna.

# Routes and Touring Information



St. Louis will be fortunate, shortly in owning one of the prettiest routes for a 1-day motor car trip in the whole United States when the new Arcadia highway will be dedicated on May 23.

The road covers a distance of about 100 miles. It runs south from St. Louis through some of the most famous historical and scenic territory in Missouri. Most of the route goes through the heart of the Ozark Mountains. The terminus is the Arcadia Country Club, where quite a number of rich St. Louisans have their country homes.

From St. Louis the road goes to De Soto and then to Bonne Terre, Flat River and Doe Run, where the St. Joseph Lead Co. has the biggest lead mines in the country.

F. P. Graves, a retired mining man at Doe Run, has one of the largest collections of minerals and of relics in the whole world. He has been visited by many tourists and is always glad to show his collection.

One of the next points of interest on the road, Iron Mountain, is famous because it gave the name to the Iron Mountain Railroad. The village is deserted now. In the 50's it was a literal beehive. Iron was mined there then in large quantities.

Fort Davidson and Graniteville are two spots that should be seen. At Fort Davidson, a hole in the ground now, General Price had his Confederate troops at the beginning of the civil war and they followed a large part of the present Arcadia highway to the north. Graniteville is known because of the immense granite quarries there. A giant elephant figure is fashioned by nature in granite and there is also a big granite sphinx. The Arcadia Country Club, the southern end of the road, has many scenic features, among them a replica of Lake Killarney of Ireland.

The road is being worked on, and in May, when it is opened, it will be an ideal tour on a wonderful gravel highway.

## INDIANA TO VIRGINIA

Sullivan, Ind.—Editor Motor Age—Please map out a motor car route from Sullivan to Roanoke, Va. What guide book would explain the route?—E. W. Kelly.

Motor to Terre Haute, a distance of 28.2 miles over good gravel roads. Traveling on the old National pike you pass through Seeleyville, Staunton, Turner, Brazil, Harmony, Rells, Manhattan, Coatesville, Mt. Meridian, Bellville, Plainfield, Bridgeport, Indianapolis, Cumberland, Greenfield, Ogden, Louisville, Dublin, Cambridge City, Centerville, Richmond, Eaton, New Lebanon, Dayton, Harshman, Fairfield, Enon and Springfield, where you will find most excel-

## The Arcadia Highway

lent gravel pike roads following through Harmony, Vienna, Brighton, Somerford, Lafayette, W. Jefferson, Alton, Columbus, Granville, Newark, Hanover, Nashport, Irville, Zanesville, Bridgeville, Norwich, New Concord, Cambridge, Washington, Elizabethtown, Fairview, Hendrysburg, Morristown, Lloydsville, St. Clairsville, Bridgeport, Wheeling, West Alexander, Claysville and Washington. Between Washington and Hagerstown the itinerary is Beallsville, Brownsville, Uniontown, Somerfield, Petersburg, Keyser's Ridge, Grantsville, Frostburg, Eckhart, Cumberland, Bedford, McConnellsburg, Chambersburg, Greencastle Hagerstown.

The New York-Atlanta highway is traversed through Tilghmantown, Battlefield of Antietam, Sharpsburg, Shepherdstown, Halltown, Charlestown, Clifford and Berryville. A route 8 miles shorter from Hagerstown lies through Williamsport, Martinsville, Clarksville, Bunker Hill, Ridgeway, Clear Brook and Winchester. Continue south through Stephen City, Middletown, Strass-

### NOTICE TO CORRESPONDENTS.

Motor Age has received communications addressed to the Routes and Touring department from the following named towns and nom de plumes:

Dallas, Tex.—O. U. M. Age.

—R. W. Trowbridge.

These communications will be held until the proper signatures have been received. All communications written over a nom de plume must bear the writer's signature in order to receive attention. These signatures are wanted as proof of the authenticity of the inquirers.—Editor Motor Age.

burg, Maurertown, Woodstock, Edinburg, Mount Jackson, New Market, Lacey Springs, Harrisonburg, Mount Crawford, Burkstown, Verona, Staunton, Minte Springs, Breenville, Midway, Fairfield, Lexington, Fancy Hill, Natural Bridge, Buchanan, Troutville, Cloverdale and Roanoke.

Volumes 3 and 4 of the Blue Book give explicit directions on the above route. In the near future Motor Age will publish a map which includes the route just outlined.

### DETROIT TO NASHVILLE

Ann Arbor, Mich.—Editor Motor Age—I should like to know the feasibility of a trip from Detroit to Nashville, Tenn., in a light 25-horsepower touring car. I would have to start about April 5 and be back within 2 weeks. What would be considered proper equipment for such a trip?—G. W. Burgess.

This trip is over mostly level country on good gravel or stone roads. The itinerary as outlined in the Blue Book is by way of Dearborn, Wayne, Ypsilanti, Stonycreek, Milan, Dundee, Toledo, Perrysburg, Bowling Green, Bays, North Baltimore, Van Buren, Findlay, Williamstown, Dunkirk, Kenton, Northwood, Bellefontaine, West Liberty, Urbana, Springfield, Enon, Fairfield, Harshman, Dayton, Centerville, Ridgeville, Lebanon, Pischgah, Sharon, Reading, Avondale, Cincinnati, Lawrenceburg, Aurora, Risingsun, Vevay, Carrollton, Ky., New Castle, Shelbyville, Louisville, Mount Washington, Highgrove, Cox Creek, Bardstown, New Haven, Buffalo, Magnolia, Hardyville, Uno, Bearwallow, Cave City, Glasgow Junction, Bowling Green, Franklin, Mitchellville, Fountain Head, Whitehouse, Goodlettsville, and Nashville.

As for equipment, a complete set of



IN THE WOODS NEAR BONNE TERRE, M O., ON THE ARCADIA HIGHWAY



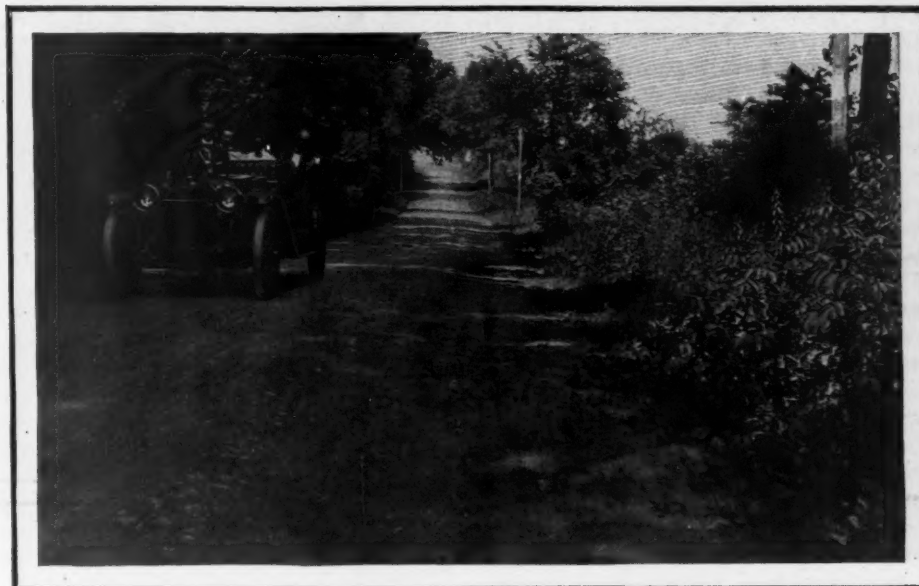
tools, extra casings and inner tubes, canvas bucket for carrying water, some rope, extra supply of gasoline and oil, jack, extra spark plugs, etc., might be suggested.

**TO TAKE CAMPING TOUR**

Fremont, Neb.—Editor Motor Age—We are contemplating making a camping trip by motor car from Fremont, Neb., to Oakland, Cal., and would like explicit road directions through Cheyenne, Ogden, Winne-mucca and then down through the Feather river valley. Can this be done?—J. A. West.

Follow the North Platte route through Ames, North Bend, Schuyler, Columbus, Silver Creek, Central City, Grand Island, Wood River, Kearney, Odessa, Overton, Lexington, Cozad, Gothenburg, Maxwell, North Platte, Sutherlan, Paxton, Ogallala, Big Spring, Julesburg, Chappell, Sidney, Kimball, Pine Bluff, Cheyenne, Ozone, Sherman, Tie Siding, Red Buttes, Laramie, Bosler, Lookout, Medicine Bow, Como, Fort Fred Steele, Rawlins, Pinor, Tipton, Bitter Creek, Black Buttes, Thayer, Rock Springs, Green river, Granger, Ft. Bridger, Evanston, Wasatch, Castle Rock, Emory, Baskin, Echo, Henefer, Croydon, Morgan, Peterson, Gateway, Riverdale, Ogden, Pleasant View, Willard, Brigham, Kelton, Terrace, Montella, Cobre, Wells, Deeth, Elko, Palisade, Battle Mountain, Winne-mucca, Lovelocks, Wadsworth, Reno, Hobart Mills, Truckee, Auburn, Sacramento, Stockton, and Oakland. From Cobre, Nev., a different route would be through Currie, Cherrycreek, Ely, Eureka, Austin, Fallon, Wadsworth, etc.

Motor Age would advise you to keep on the main traveled route, although you can leave Hobart Mills, Cal., for Downieville, and Oroville, on the Feather river, then Marysville, Lincoln and Sacramento. Such a trip certainly can be accomplished, and you will enjoy it three-fold by camping. There will be no necessity of your hurrying along to make a certain town



THE ARCADIA HIGHWAY FOLLOWS THE TELEGRAPH ROAD IN ST. LOUIS COUNTY

before dark, thus missing much of the beauties of the journey.

The Blue Book for 1912 will be out in May with complete directions on this trip and everything west of the Mississippi as well.

**OKLAHOMA TO SOUTH DAKOTA**

Erick, Okla.—Editor Motor Age—I would be pleased to have a route from Enid, Okla. to Camp Crook, S. D., by way of Denver or Yellowstone national park, and return by way of Kansas City. Also give me an idea as to the condition of the roads such as sand, hills and filling stations.—Subscriber.

Enid to Denver is through the following towns: Kremlin, Pondereck, Medford, Renfrew, Caldwell, Wellington, Riverdale, Peck, Wichita, Goddard, Garden Plain, Kingman, Cleveland, Cullison, Wellsford, Greensburg, Ford, Dodge City, Sears, Howells, Cimmeron, Ingalls, Charleston, Pierceville, Garden City, Lakin, Hartland, Ken-

dall, Mayline, Syracuse, Medway, Coolidge, Holly, Grenada, Keon, Grote, Morse, Lamar, Hasty, Las Animas, La Junta, Rockyford, Napesta, Pueblo, Eden, Bragdoon, Fountain, Colorado Springs, Pikeview, Pring, Monument, Palmer Lake, Perry Park, Sedalia, Littleton, and Denver. The route outlined between Wichita and Dodge City is not over the regular transcontinental road which is somewhat longer. At La Junta you come in sight of the mountains of Colorado and soon get your fill of up and down grade travel. You will encounter very little sand.

From Denver to Cheyenne, Douglas and Yellowstone the road runs through Broomfield, Lafayette, Longmont, Berthoud, Loveland, Ft. Collins, Alford, Bennett, Wellington, Meadow, Goldsmith, Chugwater, Bordeaux, Gibsons, Wheatland, Uva, Foxtan, Douglas, Inez, Glenrock, Big Muddy, Casper, Cadoma, Powder River, Mokoma, Wolton, Moneta, Shosphoni, Thermopolis, Illo, Dickie ranch, Meeteetse, Wiley, Cody and the park. You will find rocky roads from Cody to Basin, Sheridan, and Gillette. From Gillette motor to Sundance, Deadwood, S. D., and Camp Crook.

You need not worry about hotel or garage accommodations.

**MIDDLE WEST ROUTE DESIRED**

Burlington, Wis.—Editor Motor Age—What is the best route from Chicago to Joliet, then to Indianapolis, Louisville, Cleveland, Detroit, Battle Creek, Grand Rapids, Grand Haven, and then to Green Bay, Wis., and Milwaukee.—A Subscriber.

This entire trip is outlined in the Blue book. To Joliet it is a distance of 43 miles passing through Garfield park and La Grange. For Indianapolis, about 220 miles, pass through Chicago Heights, Dyer, Crown Point, Thayer, Rensselaer, Remington, Wolcott, Montmorenci, Lafayette, Jefferson, Frankfort, Kirklin, Rosston. The Indianapolis-Louisville stretch takes you through Seymour, Uniontown, Cruthers-



THE ROAD WINDS INTO A VALLEY UPON NEARING ARCADIA, MO.

ville, Scottsburg, Vienna, Underwood, Henryville, Memphis, Sellersburg, New Albany, a distance of 124 miles.

For Cincinnati the shortest route is through Shelbyville, New Castle, Carrollton, Vevay, Risingsun, Aurora, Lawrenceburg, North Bend. Continuing to Zanesville, O., and Cleveland, 319 miles, pass through Pleasant Ridge, Silverton, Montgomery, Morrow, Clarksville, Wilmington, Sabina, Washington Court House, Williamsport, Circleville, Lancaster, Rushville, Fultonham, White Cottage, Zanesville, Dresden, Adams Mills, Conesville, Franklin, Coshocton, West Lafayette, New Comerstown, Port Washington, Gnadenhutton, Tuscarawas, Beidler, New Philadelphia, Canal Dover, Strasburg, Beach City, Justus, Navarre, Massilon, Canton, Greentown, Akron, Ghent Brecksville and Cleveland.

The route from Cleveland to Detroit, Mich., extends through Ridgeville, Elyria, Oberlin, Norwalk, Monroeville, Bellevue, Clyde, Fremont, Woodville, Toledo, Dundee, Milan, Stonyereek, Ypsilanti, Denton, Wayne, Dearborn, and Detroit, a distance of 196 miles. Headed for Battle Creek, Grand Rapids and Grand Haven, Mich., pass through Dearborn, Wayne, Ypsilanti, Ann Arbor, Chelsea, Jackson, Parma, Albion, Marshall, Battle Creek, Galesburg, Kalamazoo, Coopers Corners, Plainwell, Martin, Bradley, Wayland, Corinth, Cutlerville, Grand Rapids, Allendale, and Grand Haven which is about 219 miles. Continuing to Mackinaw City the itinerary is Ferrysburg, Muskegon, White Hall, Montague, Hart, Ludington, Scottsville, Manistee, Copemish, Grawn, Traverse City, Elk Rapids, Eastport, Norwood, Charlevoix, Petoskey, Bay View, Oden, Alanson, Brutus, Pellston, Lakewood, Carp Lake, and Mackinaw City. This Grand Haven-Mackinaw City stretch is 234 miles.

Motor Age hardly thinks you would care to make the trip around the north end of the lake although this has been done and an account of it printed in Motor Age of September 28, 1911, in the Routes and Touring department. It would be a wise thing to read this before attempting the circle.

There are numerous points between Grand Haven and Mackinaw from which you can ship your car. You might send it to Marquette, Menominee or direct to Green Bay, Wis. The larger part of the distance, 190 miles, from Marquette to Green Bay is over gravel or macadam roads so you will be perfectly safe in shipping to Marquette. The itinerary is Harvey, Yalmer, Skandia, Trenary, Osier, Rapid River, Masonville, Gladstone, Escanaba, Bark River, Powers, Nadeau, Bagley, Talbot, Daggert Stephenson, Wallace, Menominee, Marinette, Peshtigo, Oconto, Collardsville, Little Suamico, Duck Creek, and Green Bay.

Green Bay to Milwaukee is one of the finest rides in that part of the country. It is a distance of 63 miles skirting the

shores of Lake Winnebago to De Pere, Greenleaf, Sherwood, Stockbridge, Calumetville, and Fond Du Lac. For Milwaukee you have an option of a road by way of Oconomowoc through Theresa, Mayville, Iron Mountain, Iron Ridge, Ashippun, Oconomowoc, Hartland, Pewaukee, Brookfield, and Milwaukee, 82.3 miles; or through Theresa, Addison, St. Lawrence, Schleisingerville, Richfield, Menominee Falls and Milwaukee, 62 miles.

Motor Age wishes to commend you on the scenic route which you have chosen, and hopes a camera will be part of your equipment.

#### NEBRASKA TO ILLINOIS

Bloomfield, Neb.—Editor Motor Age—I would like to have a route from Omaha, Neb., or Sioux City, Ia., to Paris, Ill. I am familiar with both roads from Bloomfield to Omaha and from Bloomfield to Sioux City. If there is a reliable publication containing this information I should like to know of it.—H. B. Frymire.

Crossing Iowa you will have a choice of two roads, the Waubonsie and River-to-River. In this case the Waubonsie might prove to be the best. As you say you know the road to Omaha, cross the river there to Council Bluffs, thence go south through Glenwood, Tabor, Randolph and Shenandoah where you strike the Waubonsie trail and follow east through Clarinda, Bedford, Mount Ayr, Kellerton, Leon, Corydon, Centerville, Bloomfield, Keosauqua, Donnelson, Ft. Madison, La Harpe, Blandinsville, Bushnell, Prairie City, Ellisville, Fairview, Farmington, Trivoli, Hanna, Peoria, Groveland, Tremont, Mackinaw, Lily, Danvers, Bloomington, Downs, LeRoy, Farmer City, Mansfield, Mohomet, Champaign, Newman, Hume, Metcalf, Chrisman, and Paris. The Waubonsie trail is well signboarded and the names of the towns ought to be sufficient.

As for the River-to-River road, follow this directly from Council Bluffs through Weston, Underwood, Neola, Minden, Avoca, Walnut, Marne, to Atlantic, then make a short cut on the White Pole road through Anita, Adair, Menlo, Stuart, Dexter, and Ortonville, where you return to the River-to-River road and continue on it through Waukee, Des Moines, Mitchellville, Colfax, Newton, Kellogg, Grinnell, Brooklyn, Victor, Ladora, Marengo, South Amana, Homestead, Tiffin, Coralville, Iowa City, West Liberty, Atalissa, Moscow, Wilton, Durant, Walcott and Davenport.

Through Illinois, from Davenport to Peoria, the towns are Rock Island, Milan, Swadonia, Alpha, Henderson, Galesburg, Knoxville, Maquon, Farmington and Peoria, from which point the route is outlined above.

If you desire a book covering this trip, with the exception of the Waubonsie trail, you will find it outlined in the Blue Book, volume 4.

#### SALT LAKE TO LOS ANGELES

Pittsburgh, Pa.—Editor Motor Age—During the coming summer I contemplate

a tour to Los Angeles, via the central route. Can Motor Age furnish me with the towns and distances from Salt Lake City by way of Provo, Nephi, Fillmore, Millard, Newhouse, Burbank, and Osceola to Ely; and from Ely to Tonopah and such information as to the condition of the roads and the possibility of obtaining supplies en route?—J. E. B.

The route you outline is not considered the central route. From Ogden, Utah, the central route extends to Brigham, Kelton, Terrace, Montello, Cobre, Mizpah, Currie, Ely, Currant, Twin Springs, Hot Springs, Stony Cabin, Tonopah, Goldfield, Lida, Alford, Big Pine, Independence, Olancho, Mojave, Elizabeth and Los Angeles. This makes a distance of 965 miles. However, from Salt Lake to Provo the towns are Murray, Midvale, Sandy, Lehi, American Fork, Pleasant Grove, and Linden, a distance of 43.8 miles which can easily be made in 2 or 3 hours. Provo to Nephi, a distance of 43.1 miles, will take you about 3 or 4 hours, routing through Springville, Payson and Santaquin. The Salt Lake Tribune, Salt Lake City, Utah, has published a route book containing running directions of roads in Utah. You can call on the Tribune for the distances between Nephi, and Fillmore, Milford, Newhouse, Burbank, Osceola and Ely. From Ely to Currant it is 58 miles; to Twin Springs, 69 miles; to Hot Springs, Stony Cabin and Tonopah, 84 miles; to Goldfield, 28 miles; to Lida, Alford, Big Pine, Independence and Olancho, 144 miles; to Mojave, 97 miles, and to Los Angeles, 98 miles.

Have enough gasoline and oil to take you from Ely to Tonopah and from Goldfield to Los Angeles.

#### PLANS COLORADO TRIP

Cotesfield, Neb.—Editor Motor Age—I am thinking of taking a trip to Peoria, Colo., and would like information as to the best road for motor cars by way of Denver and Colorado Springs. What time of the year would be the best to attempt it? I would like to have a map of the road.—H. B. Blanchard.

Motor to Loup City, Austin, Rockville, Ravenna, Kearney, Odessa, Overton, Lexington, Cozad, Gothenburg, Maxwell, North Platte, Paxton, Ogallala, Big Spring, Julesburg, Sedgwick, Proctor, Sterling, Merino, Brush, Fort Morgan, Hoyt, Bennett, Byers and Peoria. This does not take you to either Denver or Colorado Springs, so from Bennett, instead of traveling to Byers, keep on going west to Watkins and Denver, thence south to Petersburg, Littleton, Acequia, Sedalia, Perry Park, Palmer Lake, Husted, Pikeview and Colorado Springs. From Colorado Springs you can return to Peoria through Falcon, Peyton, Ramah, Mattison, Riverbend, Cedar Point, Godfrey, Agate and Deer trail. The state of Colorado is thoroughly mapped out in a book published by the Clason Map Co., Denver, and retails at \$1; also the Blue Book, volume 5, for 1913, will cover this territory. From June to October is best.

# Cleveland Car-Making Plants Busy

CLEVELAND, O., April 1—Motor car makers here are enthusiastic over the prospect of another record-breaking season. In practically every case the entire 1912 product has been contracted for and the plans for next year's campaign are well under way. So far as has been outlined at this early date, there will be no startling changes in the 1913 products of the Cleveland factories over those of this year. It is almost certain that the older makers will continue their present lines with only minor refinements and some alterations in body designs. In fact, the Peerless line for 1913, announcement of which is made this week, comprises the same features as do this year's cars.

With perhaps one exception, all the factories are running to capacity. White cars are being turned out at the rate of twelve per day; Peerless is shipping six cars a day, which is the capacity of the plant; the output totaling about 1200 for the year, while in the next 12 months it is expected to produce 1500 cars. At the Peerless plant 2,000 people were employed all winter, and there are 2500 on the payroll at present, it is said. The capacity of the Stearns plant is taxed to supply the demand from dealers and the same is true of the Winton factory. Among the electricians the same condition seems to prevail, Baker, Broe and Rauch & Lang plants carrying full load.

Latest in the motor industry in Cleveland is the new Goby Engine Co., making a non-poppet valve motor on the Goby patents. This firm is backed by the Perfection Spring Co. and Christian Girl, manager of that company is manager of the new firm.

The freight car famine that is tying up shipments in Detroit is not felt here. This is explained by the fact that not only is this a larger shipping center and consequently in receipt of more cars, but the motor car industry is not so extensive and the demand for cars for this purpose is not so great.

## COLE MERGER ANNOUNCED

Indianapolis, Ind., April 1—A merger of the Cole Motor Car Co. and the Henderson Motor Sales Co., both of this city, will take place on July 1 under the name of the former, while the corporation of the sales company will be dissolved. This means that the Cole company, after that date, will distribute its own product, which, for several seasons has been distributed by the Henderson Motor Sales Co.

There have been rumors to this effect for some time, but there was nothing definite on the subject until within the last few days. There is to be a division of those composing the Henderson Motor Sales Co., C. P. Henderson having arranged to go with the Cole company as general sales manager.

## All but One of Factories Running to Full Capacity — Output for 1912 Practically Sold

R. P. Henderson, vice-president of the Henderson Motor Sales Co. will become the president, it is understood, of a company to be known as the Henderson Motor Car Co. The new concern will manufacture a medium-priced car, probably in Indianapolis. L. Carter of Jessup, Ga., heavily interested in the sales company, will be a large stockholder in the company to be formed.

The Cole Motor Car Co. is arranging to manufacture the Cole on an even larger scale than in the past. To this end plans have been received, and contracts will soon be let, for the erection of another wing to the new Cole factory building. This wing, which will be of reinforced concrete construction, will be four stories high. The cost will be about \$100,000.

## ACCOUNTING ASKED FOR

New Haven, Conn. April 1—Charles E. Bunnell and Richard F. Bradley of New Haven, Conn., have brought suit against Willis P. Corbin of New Britain for an accounting and asking for a receiver for the defunct I & F Motor Car Co. which was organized to build motor cars in Bradford. The company was floated with a stock issue of \$100,000 in \$1 shares, \$49,000 being in preferred stock. Mr. Bunnell holds 2794 shares of preferred and 20,250 of common and Mr. Bradley 1458 preferred and 20,250 common. The assets seemed to be summed up in cases in action are worth \$568.

## CARL FISHER QUILTS AS DEALER

Indianapolis, Ind., April 1—Probably the most important change that has taken place among local motor car dealers in many years is announced in the withdrawal of Carl G. Fisher from the Fisher-Gibson Co. Mr. Fisher was the first motor car dealer in the city and in the future will devote his entire attention to the Prest-O-Lite Co. and the Indianapolis motor speedway, being president of both.

The Fisher-Gibson Co. passes into the control of Cecil E. Gibson, who has been treasurer and general manager of the company for the last 18 months, David Sommers and David May, of Cincinnati, and A. Waldheim, of St. Louis. All except Gibson are interested in the Sommers-May-Stern string of retail furniture stores scattered over the country.

Incidentally, the new owners of the Fisher-Gibson Co. are the same persons who recently took over from Mr. Fisher and his associates the Empire Motor Car Co., Mr. Fisher having determined to get out of both the retail and manufacturing

end of the motor car business. D. Sommers, it is understood, will be president of the Fisher-Gibson Co., while Mr. Gibson will continue in his present position as treasurer and general manager.

The Fisher-Gibson Co., in addition to conducting a large garage and repair shop, and a wholesale and retail business in sundries and accessories, is distributor in this territory for the Overland, Stearns, Alco, Stutz, Stoddard-Dayton, Empire and Flanders electric.

## TIRE COMPANY AT HAMMOND, IND.

Hammond, Ind., April 1—A company to manufacture motor tires has been organized at Hammond, Ind., under the name of Frederick L. Heintz and has been incorporated with an authorized capitalization of \$100,000. Directors and incorporators of the company are F. L. Heintz, L. M. Heintz, J. G. Vanderveer, Louis Connaghan and Conrad Fischer.

## TRUSTEE ASKS TO SELL

Boston, Mass. April 1—Thomas J. O'Brien, who is trustee of the bankrupt estate of the Harriman Motor Works Co. of Glastonbury, Conn., has applied to George A. Kellogg, United States referee in bankruptcy, for permission to sell the machinery and tools of the company that are in his possession. He has been offered \$1200 and the person making it agrees to pay that sum and take the property subject to the mortgages and other incumbrances that are on it. A meeting of the creditors has been called to pass it.

## RUSH WORK ON OMAHA 30

Omaha, Neb. April 1—Active work has been begun on the new Omaha 30, by the Omaha Motor Co. At present, the work is being done at the Stroud machine factory which adjoins the site where the motor company will erect its factory. It is expected to have the first cars on the street about April 10. D. W. Henry returned recently from the east, where he made contracts for various parts and material. The company was organized recently with a capital stock of \$1,000,000.

## NEW IN GRAND RAPIDS

Grand Rapids, Mich., April 1—The Commercial Service Truck Co. has been organized to take over the business of the Van-L Truck Co., now doing business at Third and Stewart streets. The new company is capitalized at \$175,000, of which \$112,000 has been subscribed. The officers of the new company are: President, Philip Moran; vice-president, J. W. Landman; secretary, G. H. Greenbauer. Sybrant Wesselius, Henry Brink and J. H. Hagan also are interested.

## FRANKLIN INVADING CANADA

Toronto, Can., April 1—The Franklin Automobile Co., of Syracuse, N. Y., has been granted a license by the Ontario legislature to operate in this province.

# The Realm of the

## Chicago Inaugurates Taxicab Reforms

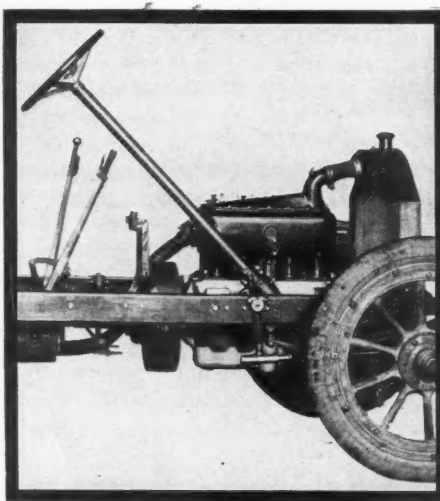
THAT the conditions of the public motor cab service require highly specialized vehicles for economical operation is forcibly presented in the announcement that the Walden W. Shaw Livery Co., Chicago, is building the chassis for its own taxicabs, limousines and touring cars. This firm is one of the pioneers in the taxicab business and has introduced many changes from accepted practices which are based on the results of its experience in carrying Chicagoans about the city.

The most radical step to be taken by the Shaw company is the decision to employ women chauffeurs on some of its vehicles. A large part of the cabs stationed in the daytime about the large department stores and hotels will have women drivers, a decision which has been hailed with delight by the feminine patrons of the taxicab. The public chauffeurs will, it is stated, appear on the streets in a few weeks and there are several women working in the Shaw repair shops and taking driving lessons as prospective drivers. It is intended to place about twenty cabs driven by women in commission, and with the newspaper announcements of the fact, the manager was overwhelmed with personal applications from the fair would-be drivers.

Whether or not this had a bearing on the determination of the company to build the vehicles in its own shops and after its own designs is not apparent. However, in the new design the chief thought has been to make the cars more simple to drive and more easy to repair. Loss of time in making repairs and replacements has been the determining factor with Paul Geyser, the designer of the new chassis. Lack of standardization of parts and lack of accessibility heretofore has made it necessary that the entire vehicle be laid up while undergoing repairs. With the new design, practically all the major repairs will mean that the vehicle remain in the shop only a short time while a duplicate part is put in. The car can then be on the streets and bringing in an income while the damaged part is being repaired ready for a subsequent replacement.

In general, the construction throughout looks toward universal interchangeability. All holes in frame, housings and all other parts are accurately jigged so that new parts can be substituted at a moment's notice. Gearset, clutch and motor are sep-

Shaw Company Providing Women Drivers to Care for Department Store Trade and Also Building Its Own Chassis—Fixed Spark and Accelerator Control Only Clear Steering Column



SHAW TAXICAB CHASSIS, SHOWING CLEAR STEERING COLUMN

arate units and each can be quickly dismounted without disturbing the others. For instance, the gearset is so arranged that removal of the cover and the four bolts by which it is suspended allows the gearbox to be removed without disturbing the control lever or the operating shaft. The removal of six bolts permits the entire power plant to be slid forward and out of the chassis. This includes the motor, radiator and entire lubrication and ignition systems.

Simplicity of operation has been reached by clearing the steering post of all controls. The throttle is controlled solely by a foot accelerator and ignition is cared for by a Bosch fixed spark magneto so that spark control is eliminated. At the same time, provision against breakdowns has not been overlooked; for instance, the motor lubrication is provided for by both constant level splash and forced feed, the motor being equipped with two individual pumps, one for the forced feed and one for providing the splash level. These pumps can be worked independently or together and, in case both fail, sufficient lubrication for a 60-mile drive is provided

in the splash compartment reservoir.

Another of the unusual features in this design is the use of a clutch brake which acts upon the disengagement of the clutch to bring all revolving parts to a stop and facilitates gear-shifting. The gear reduction on high speed is 4 to 1 so that the motor develops its normal power when the car is going at a somewhat lower speed than is usual in ordinary practice. This permits the use of a somewhat smaller motor than otherwise could be employed; in fact, the 24-horsepower motor is fitted to a chassis designed the same as if a 40-horsepower motor were to be installed in it.

The motor is of Continental construction, but is built according to Geyser's own design. It is a four-cylinder L-type of motor with comparatively long stroke and valve mechanism inclosed. The cylinders are  $3\frac{3}{4}$  by  $5\frac{1}{4}$  inches in size and are cast in block. Cooling is by thermosyphon with flywheel fan. The flywheel thus, in addition to its original use, performs the functions of fan and clutch face. The radiator is mounted upon trunnions so that this part, which is frequently damaged in collisions in case of rigid attachment, is allowed to give so that the trunnions themselves take up the shock and the radiator is not damaged. Particular attention has been paid to the springs to produce a type that will be flexible enough to ride easy with one passenger and strong enough to carry full load. The result has been a spring of special steel alloy with specially shaped leaves with great flexibility.

The designer finds that a motor with a comparatively long stroke has the advantage in taxicab service, as it prevents the extremely rapid acceleration to which public drivers are prone and which appreciably shortens the life of a motor. He has also found that there is a slightly increased economy in public service in favor of the longer-stroke motor. Service of this kind has special problems of its own so far as the motor equipment is concerned and it is only through years

# Commercial Car

## Teaching Teamsters to Drive Trucks

**Long Island Express Starts School to Make Motorists Out of Old Employes, Believing They Will Render Better Service Than Will Chauffeurs—Stables Being Converted into Garages**

of actual work with it that the best type can be evolved. Geysers' 4 years of experience in caring for the 200 cars in the service of the Shaw company has shown him where changes need to be made to meet Chicago's peculiar conditions. While the new design of chassis is the first in which all these special features have been combined, the Shaw cabs have for several years been changed to meet the demands of the service in some respects. For instance, clutch brakes for 3 years have been fitted by the Shaw chassis as soon as purchased, and the ignition has been by fixed spark for a number of years.

### IN THE MARKET

The International Automobile Co. was 5 minutes late and thereby lost a chance of disposing of several motor trucks in Pittsburgh. The city had opened bids for a large quantity of city supplies, the motor trucks being in the list. The time set for opening the bids came and Director H. B. Oursler gave them to City Controller E. S. Morrow. Five minutes later came the offer of the International

Co., which Controller Morrow threw out, as he could not legally accept it because of the lapse of the 5 minutes. Bids were asked by the city for motor-propelled machinery which totals to about \$75,000. The expenditure of this money is allowed in the city budget, recently compiled. The list includes six motor combination chemical engines and hose wagons, one or more tractors to be attached to horse-drawn fire engines, five police patrol wagons and two roadsters.

### HARTFORD BUYS TRUCKS

The city of Hartford, Conn., with a population of about 100,000, has gone into the matter of motorization in a most systematic way, and next July the working efficiency of the Hartford fire department will be increased by the acquisition of three additional Pope-Hartford combination chemical and hose wagons and two additional Pope-Hartford chief's cars, orders for which have just been placed. The fire board announces a plan providing for the complete motorization of the department in 1 year whereby an annual expense of \$12,000 can be done away with.

THE Long Island Express of New York is preparing to inaugurate a school for motor truck drivers among its teamsters. To that end J. W. Payne, master of transportation, is spending several weeks in the Alco service and maintenance building.

The authorities of this company, advocates of motor trucks to supersede horses, have added twenty Alco trucks of 3½ tons capacity in less than a year. The number of horses they bought this year was one-fourth the number formerly purchased annually and in another year or two their service will be almost entirely motorized.

"Instead of employing chauffeurs to operate our motor trucks, we are training our regular drivers," said Mr. Payne, who is in charge of the company's force of operators. "This is more practical, because the men who have driven our horses are familiar with express problems, the handling of merchandise, loading, unloading, shipping terminals, and so on. The actual operation and care can be mastered in a short time.

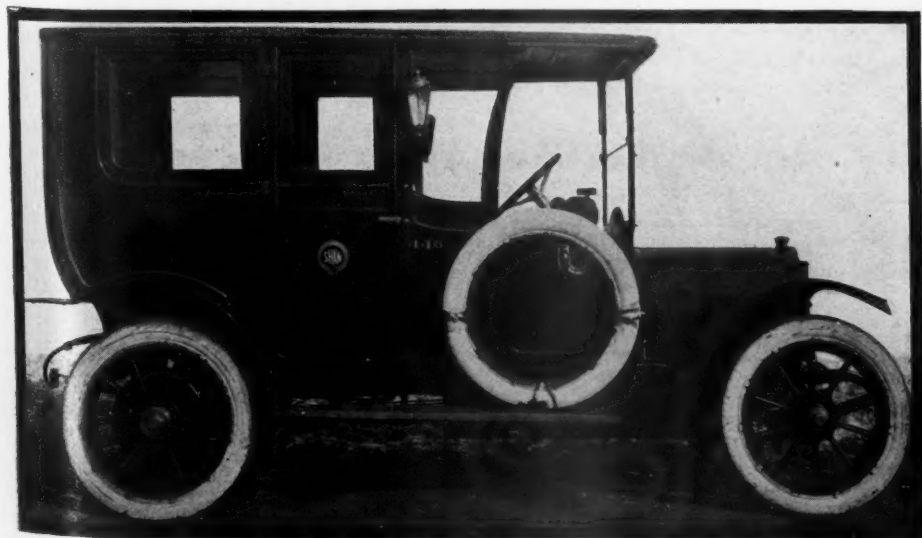
"We will make the drivers responsible for their machines. They will turn in reports every night showing what was done in caring for the trucks. From the experience of others we are convinced that no motor truck can or should be expected to do its work without attention. A truck is subjected to wear and strain in service and its life can be prolonged to the maximum with a degree of care in lubrication and inspection.

"We are rapidly transforming our stables on Long Island into a garage, and service shops will be equipped to take care of the trucks.

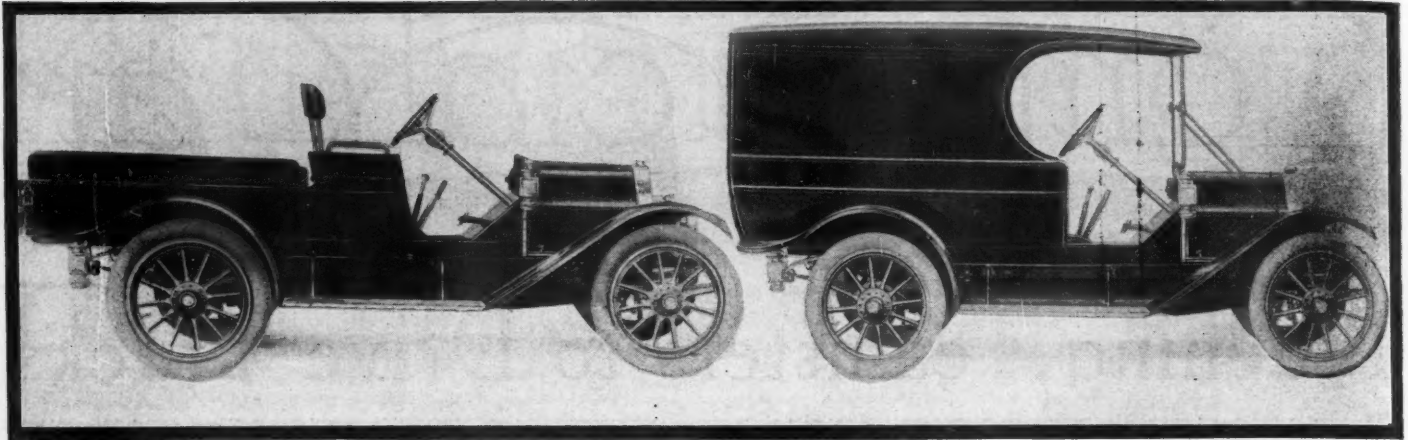
"In our experience with motor vehicles there is no comparison between these and horses. The cost of operation of the trucks is much lower and the service is infinitely better. Every winter our horse deliveries have at times been crippled and it has been necessary to send out and rescue the horses in severe weather.

"In the summer the horses again suffer from the heat. During the hot spells last year we saved the lives of at least forty of our horses by keeping them in the stables and using our trucks 24 hours a day.

"As for comparative years of usefulness, we have retained our horses in serv-



SHAW TAXICAB BUILT BY SHAW COMPANY



JUST added to the Overland line is model 59, which comes in two body styles. The Special is an enclosed body, the specifications of which are: Length of floor, 60 inches; width of floor, 43 inches; height from floor to top, 53 inches. The express body type is: Length of floor, 67 inches; width, 42 inches; height of side, 16 inches; width of side wings, 6 inches. The wheelbase is 106 inches and the four-cylinder motor is 4 by 4 1-2 inches

ice 2 years, sometimes 3 years. In certain lines of industry the life of a horse is longer, but express service is known to be more severe than almost any other service. A good motor truck may do the work of four generations of a horse while proving almost no expense except the cost of operation."

**MILKMEN WANT TRUCKS**

Members of the Interstate Milk Association, a meeting of which took place last week in Philadelphia, are seriously considering the advisability of installing motor trucks as a cheaper means of transportation of milk cans from the rural districts to Philadelphia. Two trucks operating between Woodstown and Camden have so far amply demonstrated that not only can the payment of high rates to the railroads be avoided, but that a considerable saving in time to this city could be made, thereby eliminating the expense incident to refrigeration during transportation. Walter Pancoast, of Woodstown, president of the association, advocated the change.

**NOW IT'S PHILADELPHIA**

Philadelphia's fire department is to be motorized. Several laps behind other cities in the race to reduce the loss of lives and property incident to fire, local horse-drawn equipment is slowly but surely to be superseded by motor-driven ap-

paratus, plans and specifications for which are now being drawn up. As soon as a satisfactory agreement as to the type to be adopted has been reached the report will be made and bids invited.

It was the original intention of using the money available for new fire equipment in the purchase of the horse-drawn type, but a protest was lodged with Director of Public Safety Porter by the committee on municipal affairs of the board of trade, after the members had made an investigation of the fire-fighting methods in vogue in several other cities, and profiting by the information thus gleaned the original bids were withdrawn. The purchasing of motor trucks and the elimination of horses will be gradual, but thorough. At present about \$40,000 is available for the purpose.

**BOSTON MAYOR'S GOOD PLAN**

Mayor John F. Fitzgerald, of Boston, has awakened to the realization of the tremendous growth of the motor truck industry and last week he sent letters to the officials in charge of the Franklin Institute and the Wentworth Foundation, two of the manual training schools connected with Boston's school systems, urging that some arrangement be made whereby young men may learn how to drive and care for motor trucks. He said that there was no reason why ambitious young

men should not be given a chance without being compelled to pay for such a course. He would not have it open for teaching how to drive pleasure cars, he says. At present anyone wishing to learn how to drive a truck must go either into a repair shop or take a course at the Boston Y. M. C. A. school or some other school.

**ELECTRIC AIDS M. S. P. C. A.**

President Francis H. Rowley, of the Massachusetts Society for the Prevention of Cruelty to Animals, in his annual report pays a high tribute to the electric motor ambulance used by the organization in its work, as follows: "The purchase of an electric ambulance last spring has been more than justified. During the intense heat of the past summer we should have been most distressingly embarrassed in our work without it. There were days when no horse could be hired to draw the old ambulance, and had we no motor vehicle, horses that were constantly dropping on the street, from heat and exhaustion, would have had to remain for hours in the broiling sun without attention. It was kept busy night and day."

**CARRIES PEOPLE AND FREIGHT**

A company is being organized at Sheboygan, Wis., to operate a motor transportation service for passengers and freight between Sheboygan and important

**NEW AGENCIES RECENTLY APPOINTED BY COMMERCIAL CAR MANUFACTURERS**

Chicago .....	Charles M. Hayes.....	Stegeman	San Fran'isco, Cal. Standard Motor Car Co.....	Federal
Minneapolis, Minn. A. F. Chase & Co.....	Lincoln	South Bend, Ind. Milton G. Smith Ga'ge and Auto Co. ....	Gramm	
Newark, N. J. B. F. Adams.....	Federal	Springfield, O. Harry A. Day.....	Auglaize	
New Haven, Conn. Biever Motor Car Co.....	Lippard-Stewart	St. Louis, Mo. Brown Auto Co.....	Federal	
New York.....	A. F. Peck.....	St. Paul, Minn. C. V. Sales Co.....	Federal	
New York.....	Russell A. Clapp.....	Terre Haute, Ind. Terre Haute Automobile Co. ....	Lippard-Stewart	
Oakshoah, Wis. Meter Electrical Construction Co....	Auglaize	Tipton, Ind. Ed-Le Auto Co.....	Auglaize	
Peekskill, N. Y. Lawson Motor Car and Garage Co. ....	Federal	Toledo, O. Atwood Auto Co.....	Federal	
Philadelphia, Pa. Fischer Motor Car Co.....	Federal	Toledo, O. H. H. Dennis.....	Alco	
Phoenix, Ariz. New State Auto Aerial Co.....	Federal	Toronto, Can. A. Crow.....	Alco	
Pittsburgh, Pa. A. DeRoy Co.....	Gramm	Troy, N. Y. Troy Automobile Exchange. ....	Lippard-Stewart	
Pittsburgh, Pa. Cartney Bros.....	Indiana	Urbana, Ill. Urbana Auto Co.....	Monitor	
Pittsfield, Mass. Yon Brothers.....	Gramm	Vancouver, B. C. Tucker & Campbell.....	Federal	
Portland, Ore. Stoddard Dayton Auto Co.....	Federal	Walkerville, Ont. New Dominion Motors Co.....	Federal	
Providence, R. I. Woodworth & Dickinson.....	Federal	Washington, D. C. Motor Car Co.....	Dart	
Reading, Pa. Marathon Motor Sales Co. ....	Lippard-Stewart	Windsor, Ont. Windsor Mfg. Co.....	Lincoln	
Redfield, Ia. Nelson Brothers.....	Dart	Winnipeg, Can. Darwin Motor Truck Co.....	Commer	
Richmond, Va. Oakland Auto Co.....	Federal	Winona, Minn. Winona Motor Co.....	Monitor	
San Antonio, Tex. Peden Iron and Steel Co.....	Alco	Zanesville, O. Price Implement Co.....	Auglaize	
San Francisco, Cal. Auto Sales Co.....	Alco			

cities and villages in Sheboygan county, notably Howards Grove and Kiel. The company intends to purchase two buses for passenger service and two motor trucks of 2½ and 5 tons capacity for freight use. To Howards Grove and Kiel the company will use the old Calumet road, a government turnpike which is included in Sheboygan's highway improvement plans under state aid. The territory through which the service will run is thickly populated, but the roads are in poor condition and transportation, especially that of farm products, building supplies, etc., demands a big price.

**NEWTON ADDS MOTOR PATROL**

Chief of Police Fred Mitchell, of Newton, Mass., has just added a motor patrol and combination ambulance to the police equipment of Newton that was built under his specifications. Chief Mitchell has the unique distinction of never having driven his motor wagon in which he makes his rounds beyond the boundary line dividing Newton with its neighboring cities and towns, taking the stand that it is Newton property and as such should not be used outside its own territory.

**COMPANY TO BE REORGANIZED**

Efforts are being made to bring about a reorganization of the Cortland Motor Co., of Pittsfield, Mass., which manufac-

tured light trucks for a short time and then went into bankruptcy. It is understood that some of the officers of the company expect to get financial backing and that operations will be continued somewhere in or near Boston.

**BUFFALO TESTS ENGINE**

The new motor fire engine, recently purchased by the fire board of Buffalo, N. Y., was tested last Saturday morning and it made a speed of 4 miles in 6 minutes. With sixteen men aboard the vehicle several times was running at the rate of 70 miles per hour. The car was run through Buffalo's busiest thoroughfare, Main street, but could not be sent along at a faster pace than this, although it is capable of higher speed. The motor engine is an ordinary six-cylinder car with hose-cart attachment. At the front is a series of valves and pipes which connect the engine with the water pumps. When at work the hood of the machine is removed and the machinery is in full view. The first test was made with 200 feet of pipe. The engine threw 700 gallons of water.

**CATONSVILLE SATISFIED**

The fire department of Catonsville, Baltimore county, Maryland, has found the motor fire apparatus recently installed there to be a great improvement over that of the old horse-drawn apparatus.

The motor car is a combined chemical and pumping engine and a four-cylinder 70 horsepower motor. The engine is run and its pumps operated by the same power. The car carries 1,200 feet of 2½-inch hose and 20 feet of 5-inch suction hose. It is also equipped with a 40-gallon chemical tank, 200 feet of 1-inch chemical hose, three extinguishers and two ladders. The apparatus was called out fifteen times the first month after its installation and did splendid work in each instance. It is likely that a larger engine will be secured for Catonsville before the summer, in which case the car now in use there will be transferred to either the Gardenville or Lauraville station.

**ONE MORE FOR MILWAUKEE**

The city of Milwaukee has purchased a 1½-ton truck for the use of the fire and police alarm telegraph system. The new truck will supplant three teams of horses which have been required for the haulage work of the alarm telegraph department.

**FARMERS BUY MOTOR PLOWS**

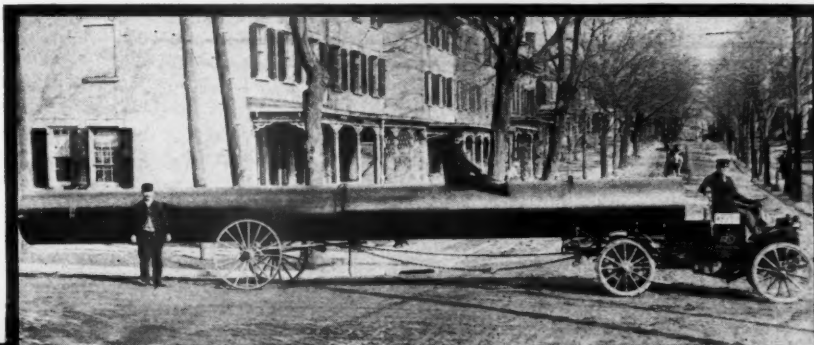
More than 2,500 engine plows have been shipped from Minneapolis in 600 freight cars this spring to plow the northwestern farms, particularly in western North and South Dakota and Montana. The average is an eight-bottomed plow costing about \$700.

**Motor Delivery Car Useful in the Retail Coal Service**

*HERBERT CRABTREE, a coal dealer at New Brighton, Staten Island, N. Y., puts a Reo commercial motor wagon to a variety of uses. Since buying it last August he claims to have averaged fifteen loads of coal a day, each load weighing 1 ton. During February snow storms he delivered 20 tons a day. Going into the economy of the truck, this coal dealer figures*

*that whereas it used to cost him \$1,500 for the hire of extra teams during the winter,*

*this winter he actually saved the \$1,500 by having the truck, without considering the improved service he gave his customers. As may be seen by the illustrations, Crabtree puts the truck to a variety of uses besides hauling coal. By the use of a pair of extra wheels he is enabled to haul huge sections of iron pipe. He also carries milk cans and big loads of wood.*



STATEN ISLAND COAL DEALER FINDS REO TRUCK SAVES HIM MONEY

# First of 1913 Car Announcements Out



PEERLESS 1913 MODEL 38-SIX WITH TOURING BODY

**T**HIS is the time of the year when the first announcements of the cars for the succeeding season are expected and Peerless opens the campaign by giving out the details of its 1913 line. Not many radical changes in the high-grade designs are looked for in the coming year. It was predicted long ago that since the fundamentals of motor car design to a certain extent had been definitely established, its development would take the direction of simplifying and refining constructions that already had been created. The announcement of Peerless motor cars for 1913 in advance of other makes of similar grade seems to support that prophecy.

In bodies there are offered touring car, torpedo, limousine, landaulet, berline-limousine and phaeton, with a roadster and coupe for the 38-six chassis.

#### Five Models Continued

Changes in design of the mechanical features of the cars there are none, but the cars present refinements in both the mechanism and the body forms. The same

five chassis which form the line will be continued for 1913. This consists of three six-cylinder models and two four-cylinder models. Their general dimensions are given in the following table:

Horsepower	No. of cylinders	Bore	Stroke	Wheel base	Front tires	Rear tires
38	6	4	4½	125	36x4½	36x4½
48	6	4½	6	137	36x4½	37x5
60	6	5x	7	140	38x5½	38x5½
40	4	5	5½	125	36x4½	37x5
24	4	4	4¾	113	34x4½	34x4½

Most noticeable among the mechanical changes is in the ignition system where the Bosch double synchronized system employed at present will be superseded by the Bosch dual system. The reasons advanced for this rather surprising change are on the basis of simplicity, for this eliminates one set of spark plugs, one set of wires in the distributor system and the battery distributor with its bevel gear drive from the camshaft. It is said that the dependability of the modern mag-

## Peerless Company Makes Public Its Plans for Next Season—Five Models to be Continued

neto is such that battery ignition was found to be employed only one-tenth of one per cent of the time where both systems exist and during their periods of idleness the battery spark plugs have a tendency to become carbonized and to operate uncertainly when they are called upon. When current from the battery is supplied through the magneto distributor, as in the dual system, the one set of plugs is believed to be more often in good condition, as they are always in use.

#### Change in Ignition

Along with the change in the ignition system there is also a slight alteration in the wiring. The vulcanized rubber wire bar formerly in use in Peerless cars is replaced in the 1913 models by a made-up wire bar. The latter is more compact, lighter and is mounted less conspicuously over the top of the cylinders between the spark plugs and the water outlet. It permits easier access to the motor parts on the intake side. In each lead from the magneto to the plugs two connections have been eliminated. Insulation of the conductors has been made more perfect and the individual wires may now be replaced without necessitating an entire new unit.

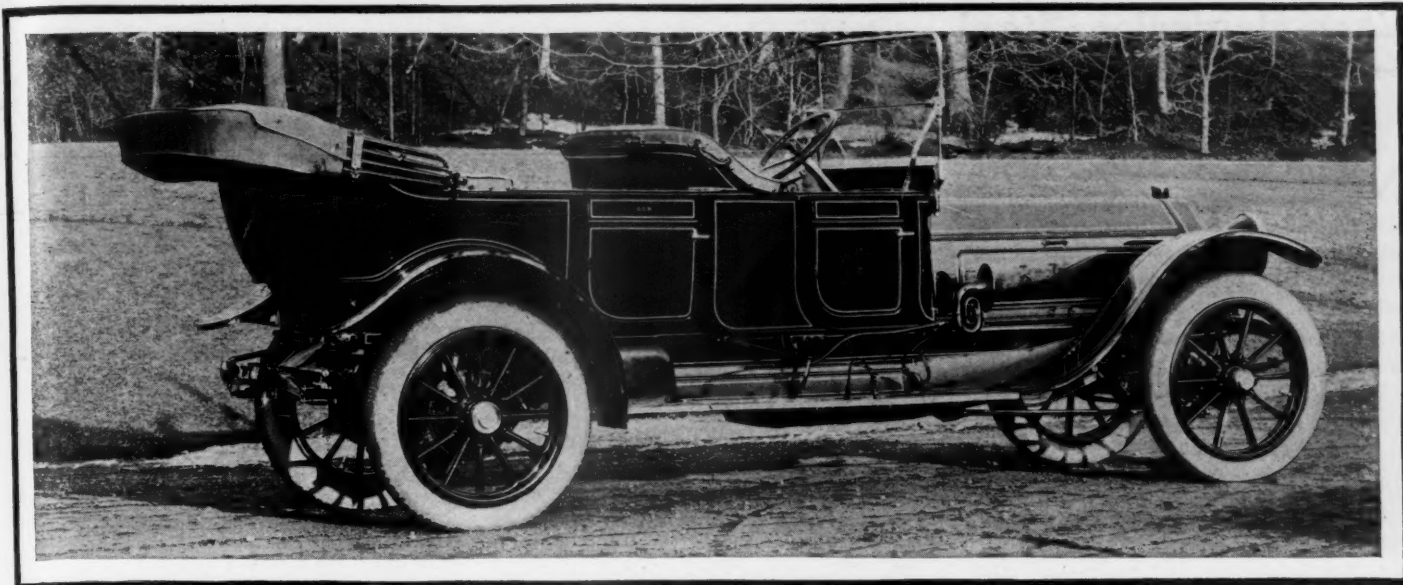
A damper throttle valve supersedes the piston type of valve in use at present. It is claimed that the action of the new throttle valve is more positive at low speeds, owing to the fact that an equal movement of the steering column hand-lever control produces a less effective opening or closing of the throttle. At high speeds it is said to offer less obstruction to the passage of the mixture of gasoline and air from the mixing chamber to the explosion chambers. The fewer parts in the mounting and control of the damper throttle valve makes for simplicity and the arrangement is lighter.

#### Lighting Generator Faster

The dynamo mounting of the Gray & Davis lighting system has been rearranged so that it is driven by a belt from the fanshaft instead of from the pumpshaft. The speed of the generator, as compared with that of the crankshaft thus has been increased so that it is operative for charging the battery or supplying the lamps at a car speed of approximately 8 miles per hour instead of 12 miles per hour as formerly.

A unique arrangement is provided in the lubrication system to prevent loss of oil. The two drain cocks of the crankcase are attached to a lever so placed





PEERLESS 60-SIX FOR SEASON OF 1913, SHOWING NEW DESIGN OF STAYRODS ON WINDSHIELD

that the bonnet cannot be fastened down when they are open. It becomes impossible, therefore, to run the car with the oil draining out of the motor and so burn out a bearing. The splash system of oiling is continued. In the way of equipment and body design there have been several refinements looking toward improvement and comfort. Dome side lights set in the dash have been adopted to replace the bull's-eye type that were hung from a bracket. The new lights are an integral part of the superstructure and by their use corner spaces that were once encumbered by various projections are cleared up. The domes are of ground glass and fit appropriately into the color treatment. The stays of the glass front which in the 1912 models are long and slant forward across the bonnet in the new design have been turned back to the body parapet. These stays supply han-

dles for anyone entering the front compartment of the car and are shorter and lighter than formerly. The new arrangement improves the appearance of the car from the front. The control on all cars is on the inside so that the free sweep of the exterior surface is not broken. The bodies are made unusually wide to insure comfort in handling the driving levers and to give the passengers more room. In order that the extra tires will not extend above the top line of the body they are set into a hollow fashioned out in the running board.

**Details of Construction**

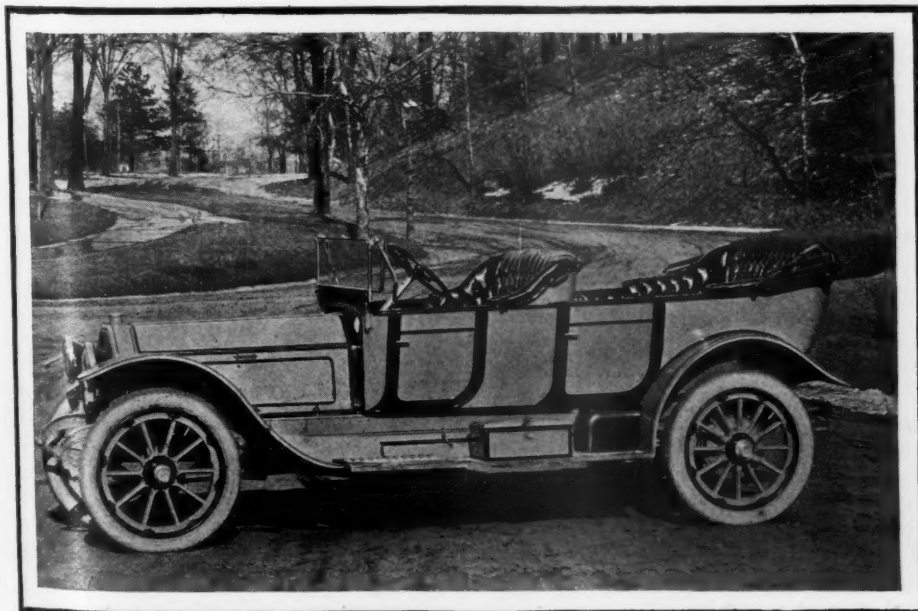
The foregoing sums up the changes in Peerless cars for the 1913 season and in all other respects the construction is the same as this year. As for the details of construction, the motor is of the T type with cylinders cast in pairs and with valves in offset chambers on opposite sides.

In the cooling system water circulation is maintained by a gear-driven herringbone gear pump located on the left side of the motor immediately behind the engine gearcase. The radiator is of the horizontal tube-and-fin design with a fan behind it. The water jackets of the cylinder are large and so designed that the cool water from the radiator and pump is taken in on the exhaust side of the motor and discharged from the top of the combustion chamber. These water jackets taper in such a way that the greatest amount of water is at the top of the cylinder, the point of highest temperature.

The Peerless carbureter, which was a new design for the 1912 line, is provided with primary and secondary auxiliary air valves; both main and auxiliary air intakes are screened and the respective passages have damper valves actuated by small levers on the dash. A small force pump attached to the frame and operated from the front of the car is provided to prime the motor. This pump draws fuel from the carbureter and sprays it into the valve chambers.

**Power Tire Pump**

Power from the motor is transmitted through an expanding-shoe clutch which is extremely simple in design and readily adjustable. A double universal joint is employed between the clutch and gearset to facilitate assembly and to protect the transmission mechanism from contortions of the frame. The gearset is a very compact one with both shafts in the same horizontal plane and mounted on annular ball bearings. Four forward speeds are supplied, with direct drive on the third speed. The four-cylinder air pump installed on Peerless cars for 1911 occupies the same position for 1913. This pump is for inflating tires and is attached to the front end of the gearcase and driven off the countershaft. A pedal connects pump shaft and countershaft when air is needed.



TOURING BODY ON PEERLESS 48-SIX CHASSIS

## Case-Hardening Steel Some Methods of Tempering Car Parts Described for Ohio Motorist

NEVADA, O.—Editor Motor Age—1— Does the Cadillac company still build its one-cylinder chain-driven car? If not, when did it discontinue its manufacture?

2—Give the best process of case-hardening steel.

3—What anti-freezing compound can be recommended as best for radiators?

4—Does Henry Ford, of the Ford Motor Co., own the American Vanadium Steel Co. or have any stock in it?—Motorist.

1—The Cadillac company discontinued building its one-cylinder car in 1908.

2—For hardening and tempering steel, to 1 gallon of common fish or whale oil, add 1 pound each of beeswax and resin. Put into a kettle and heat till it comes to a boiling point, stirring it once in a while. When thoroughly mixed it is ready for use. To harden in this solution, heat the steel till the scale rises a little, then immerse in the oil. When cool, heat over a clean fire till cherry red in the dark. The foregoing with a little practice is recommended as one of the best, if not the best, compositions for hardening steel tools for use in cutting iron and wood, or even steel. Care must be taken as to the amount of resin in the oil, as resin hardens the steel, whereas beeswax and tallow toughen it. If a person prefers to temper in daylight, clean the steel or tool, polish it and draw to a deep straw color if for cutting iron or steel and purple if for wood-cutting tools.

In case-hardening steels there are many methods in use, all of which may be the best in certain classes of work. Space will not permit a detailed description of all the methods and their relative treatments, but a few of the most common should be appreciated. It may not be generally known that the case-hardening of iron parts means the partial conversion of the outer surface into steel.

The most common method of case-hardening or carbonizing is to place the pieces in an iron case together with either bone ash, leather or horn cuttings. In packing the articles in the case care should be taken that no two pieces are in contact. Carefully lute all the joints between the lid and sides with fireclay or loam to exclude the air and heat to redness in a furnace for a time varying with the number and size of the pieces.

To case-harden with prussiate of potash, polish the article, then heat to a bright red, rub the surface over with prussiate of potash. Allow it to cool to a dull red and immerse in water, or preferably fish oil. The strength of steel is reduced by being being in water, but both its hardness and toughness are increased by being hardened in oil. Iron heated and

# The Readers'

## Forging Practice in the Hardening of Steel Parts—How to Make Fuel-Level Indicator—Drip Chambers Suggested for Removing Water from Acetylene Pipes

suddenly cooled in water is hardened, and the breaking strain, if gradually, applied, is increased, but it is more likely to snap suddenly. It is softened and its breaking strain reduced if heated and allowed to cool gradually. Iron if brought to a white heat is injured if it be not at the same time hammered or rolled. Case-hardening bolts weakens them.

The three following case-hardening mixtures have been recommended: Three parts prussiate of potash and one part of sal-ammoniac; or, one part prussiate of potash and two parts of sal-ammoniac; or, bone dust alone.

For hardening parts made from .25 carbon machine steel, such as nuts, screws, steering connection pins, rocker-arm pins and all parts called upon to resist wear but not to resist bending strains or severe shocks, the treatment is as follows: Forge; anneal, that is, heat to 1,500-1,600 degrees Fahrenheit and cool slowly; machine; carbonize or case-harden to a depth of .02 inch to .04 inch at a temperature

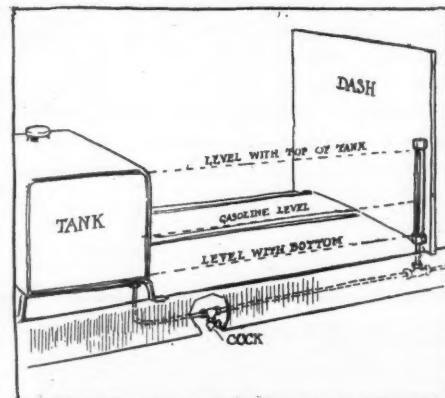


FIG. 1—STAND-PIPE IN FUEL LINE AS GASOLINE GAUGE

not to exceed 1,750 degrees; cool slowly; reheat to 1,500 degrees; quench in oil; and reheat in hot oil at 300-350 degrees and cool slowly.

3—A mixture of 3 gallons, 1 pint of water; 1 gallon, 1 quart of alcohol; and 2 quarts, 1 pint of glycerine; is one of the most popular anti-freezing mixtures, and it will not freeze at any temperature above 10 degrees below zero. Either denatured or wood alcohol may be used with commercial glycerine. The preparation given makes 5 gallons of solution, and it is advisable to keep a quantity on hand for instant use.

4—Motor Age has no record of any connection between Henry Ford and the above mentioned concern.

## Simple Gasoline Gauge Home-Made Attachment to Indi- cate Quantity of Fuel in Tank

CHICAGO, Ill.—Editor Motor Age—I have noticed that there are several gasoline gauges on the market by which it is possible to tell the amount of fuel in the tank without leaving the seat. Some of these are quite expensive and all seem rather complicated. Would it not be possible to have a gauge by introducing a standpipe in the gasoline line at a point near the dash?—Inquirer.

A home-made gasoline gauge on a principle similar to the one you suggest has been used by a motorist in England, Motor Age is informed, with considerable success. It can be used where the tank is located under the seat and is illustrated in Fig. 1. The gasoline line is cut at a point just beneath the dashboard and a T union inserted in the line. Into this a copper pipe is fitted vertically and fastened against the dash so that the top of the pipe at A is level with the bottom of the tank. At this point a 1/2-inch glass tube is inserted by means of a union, so that the gasoline level may be seen. It is necessary to protect the glass tube by covering it with a brass or iron tube the front of which has been cut away. To graduate the glass, start with an empty tank and pour in 2 gallons at a time, making a mark on the gauge to indicate the level. To prevent any danger from fire or splashing and also rapid evaporation, it is well to cover the end of the glass tube with a cap in which a small hole has been drilled. Unless the hole is in the cap the vacuum will prevent the gauge operating. To make the level more easily seen, a piece of white paper can be placed behind the glass or still better, a bright-colored shellaced cork placed in the tube. The reading is correct only when the car is level.

### GEARSET INFORMATION DESIRED

Crookston, Minn.—Editor Motor Age—I understand there is a sliding gear, silent transmission upon the market, made especially for replacing the planetary transmission in the Ford model S roadster. Where can I obtain such a gearset?—Charles L. Fargo.

Motor Age has no record of a gearset specially designed to replace the planetary gearset of the Ford, but would be glad to hear from any reader having knowledge of such a mechanism.

# Clearing House



Horsepower Affected by Pressure of Compression—Calculations for Determining Power—Oil Supply of Buick—Pneumatic Repairshop Tools

## Compression and Power How Pressure in Cylinder Affects Power Developed by Motor

**MANKATO, MINN.**—Editor Motor Age—What, if any, is the difference in power developed by two cars with four-cylinder engines of the same manufacture with a bore and stroke of 4 by 4½ inches, one with 45 pounds compression and the other with 65 pounds compression.—P. W. Pitcher.

Theoretically, a motor with 45 pounds compression, according to a popular formula, would give 36-horsepower; the same motor having the same efficiency but with 65 pounds compression, according to the same formula, would give 45-horsepower. The difference, therefore, according to theory, should be 9 horsepower.

The indicated horsepower may be determined approximately by assuming a certain mechanical efficiency for the motor under consideration. This varies from 90 per cent in some cases to lower than 70 per cent in others; the average would be probably not far from 80 per cent. The following formula has been used to arrive at the figures given above:

$$\frac{D^2 \times L \times N \times M.E.P. \times R}{550,000} = I.H.P.$$

in which D is the diameter of the cylinder; L, the length of the stroke; N, the number of cylinders; M.E.P., the mean effective pressure, and R revolutions per minute; I.H.P. indicated horsepower.

A formula which is given by Grover for the mean effective pressure, the compression being known, is as follows:

$$M.E.P. = 2C - 0.01 C^2$$

C=Compression pressure above atmosphere in pounds per square inch; and substituting in the formula for mean effective pressure we would have:

$$M.E.P. = 90 - 20.25 = 69.75$$

Thus substituting the figures which you give, in this formula, it would read for the motor with 45 pounds compression in the cylinder

$$\frac{16 \times 4.5 \times 4 \times 69.75 \times 1000}{550,000} = 36 \text{ H.P.}$$

In the same way substituting in the formula for the motor with 65 pounds compression we would have for mean effective pressure

$$M.E.P. = 130 - 42.25 = 87.75$$

and in the horsepower formula we would have:

$$\frac{16 \times 4.5 \times 4 \times 87.75 \times 1000}{550,000} = 45.9 \text{ H.P.}$$

It might be well to add that the formula for mean effective pressure does not hold for compression pressures over 100 pounds per square inch above the atmospheric pressure.

In conclusion it might be well to state that in the formula given herewith the horsepower is obtained while the motor is running at a high rate of speed. It is well known that up to a certain number of feet of piston speed a low compression engine will be more flexible and give more horsepower than a high compression engine when all other conditions are approximately the same.

## BUICK OIL SUPPLY

**Pendleton, Ind.**—Editor Motor Age—Are there any means of ascertaining how much oil might be contained in the crankcase of a Buick model 10 and how same is drained off?

2—How much oil should be put in the crankcase at a time?—A Reader.

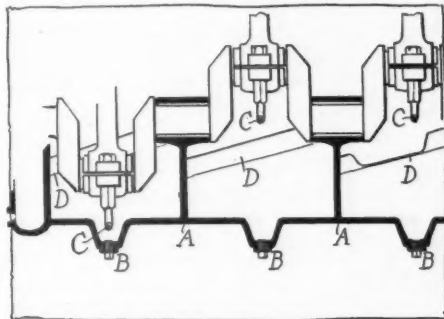


FIG. 2—CADILLAC OILING SYSTEM

1—A petcock is provided on the side of the oil reservoir at the bottom of the motor crankcase; in replenishing the supply in the reservoir, it is intended that this petcock be opened so that when the oil entering the case reaches the height of the petcock, it will begin to flow out of it, indicating that the case contains the required amount of oil. It is a wise precaution to see that the car rests on a level surface when replenishing the oil supply, and also it is well to pass a wire through the petcock before replenishing the oil supply, to see that it is not stopped with dirt.

2—The petcock is so arranged that the proper level is reached when the reservoir contains from 4 to 6 quarts of oil.

## Handling Grease with Air Compressed Air is Employed to Transfer Grease from Barrels

**SARGENT, Neb.**—Editor Motor Age—In Motor Age I noticed some writer recommended attaching air pressure to the barrel of transmission grease to cause the grease to be delivered to the measuring cup.

1—Could not the grease be delivered through a tube or hose directly into the gearcase and differential housing and save much dirty handling of the grease? And in this connection does Motor Age or its readers know of a measuring device that would be placed in the tube to measure the grease delivered?

2—In large shops I have noticed air-driven drills, riveters, etc. Are these tools made of suitable size for the motor car repair shop and would they be practicable with an air pressure of 100 to 200 pounds? We have just installed an air tank and wish to make the largest possible use of it.—W. T. Cropper.

Motor Age has been unable to find any reference to a device for transferring grease from a barrel to the measuring tank by means of air pressure. However, in the Repair Shop columns of Motor Age, March 30, 1911, issue, a device for the transmission of liquid oil from the barrel by means of compressed air was illustrated and described. This illustration is reproduced in Fig. 4. It consists of a simple means of transferring oil from a barrel into the steel supply tanks from which it is measured out to the customers as required.

The device is an L-shaped pipe construction such as is shown in Fig. 4 and it is made entirely from standard pipe fittings, and a tire valve, which are readily obtained at a very reasonable cost. The principle under which the operation of transferring the oil is performed is that of introducing compressed air into the barrel and thereby forcing the oil through the pipe P, which conducts it into the oil reservoir as indicated. The air under pressure is forced into the barrel by means of a combination of pipe fittings and the tire valve, arranged on the long leg of the pipe P. The details of this combination are shown in the sectional drawing in the center of the illustration. It is comprised of a standard 1 or 1¼-inch pipe union with a packing gland at one end, a nipple N with a tapering lower end and a regular tire valve T tapped into the side of the union as indicated.

To make the illustration more correct the nipple N should extend up almost to the packing gland and a little packing or hemp, or the like as shown, squeezed between the ends of the gland and the upper end of the nipple.

In operation, the tapered, threaded portion of the nipple N is screwed into the wooden sides of the bunghole at the top

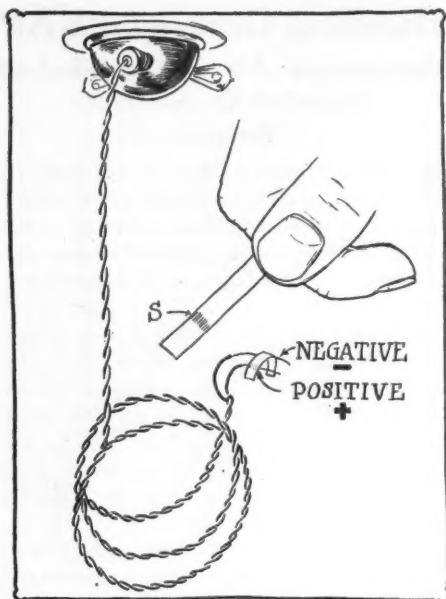


FIG. 3—TESTING POLARITY OF CHARGING WIRES

of the barrel, and the horizontal or short leg of the pipe P arranged so that the oil will flow into the receptacle desired; then the compressed air hose from a tire pump or storage tank is attached to the valve T and air forced into the barrel. Care must be exercised, however, so as not to put too much pressure into the barrel or it will burst. When oil is cold it does not flow as readily as when warm and one must bear this in mind when using a device of this nature.

Although it might be possible to use the same system for the transmission of grease, it is also possible that the pressure required would be too great, owing to the non-fluidity of the grease.

In regard to the use of air drills, riveters, etc., rotary pneumatic drills for boring wood or metal, or for grinding and similar light work, are furnished in a great variety of sizes and patterns. These are manufactured by several concerns throughout the country. The devices that would be most practicable for a motor car repair shop are designed to operate at from 80 to 100 pounds pressure; but by the use of suitable piping almost any reduction desired may be obtained, so that your 200 pounds pressure would not be excessive. The companies from which you purchase the pneumatic tools will give full information on this subject.

#### SUGGESTS DRIP CHAMBER

Parnell, Mo.—Editor Motor Age—In regard to West Point, Neb., Subscriber's question No. 3 in Motor Age for February 29, the best solution of water in acetylene gas is to use a drip chamber under the running board just below the generator. These drip chambers are made of brass, cone-shaped, with a pet cock in the lower end. They have inlet and outlet hose connections at the top and can be drained as often as required by opening the petcock. They can be bought of any supply house for 75 cents.—C. V. Roof.

## The Future of Motor Car Racing

### Californian Presents Brief in Its Defence and Shows Value to Maker and Prospective Purchaser

SAN FRANCISCO, Cal.—Editor Motor Age—Despite the general agitation against motor racing, it is at the present time a most popular form of sport and is a sport which should continue and should flourish. The many agitators who decry racing, speak on numerous occasions without an adequate knowledge of the subject and often exaggerate the attendant dangers. Since the case of the anti-races has been stated so often, and since they are getting particularly active right now, the opposite side of the question should be laid before motorists and manufacturers so they may see the great value of racing from every point of view.

Motor racing was at one time the sport of wealthy men, as well as being participated in by manufacturers on a small scale. Owing to the tremendous popularity of racing with the public and the consequent great advertising value attending the winning of a racing contest, manufacturers turned their attention seriously to this branch of the industry, if it may be called such, and bent all their efforts and ingenuity to building speedy and reliable cars. As a consequence of this, many valuable improvements were made in the construction of machines for general use. The introduction of an international character into the races added to the popular interest in these contests and spurred the makers on to producing faster and better cars than ever before. Because of their efforts and as a result of motor racing, the standard of cars was raised to a much higher plane than had previously been the case. At the present time, the international character of the racing is somewhat lacking, although it exists to a certain degree in a few races. Popular interest is still at as high a pitch as ever and bids fair to remain so.

Present day motor racing may be divided into four classes, each of which is of more or less value. The first and by far the most important is road racing on country or park roads. The next class in importance and value is speedway racing on specially constructed motordromes. The third class is dirt track racing and the fourth class, although a type of dirt track racing, may be considered separately, namely, 24-hour racing.

In road racing, the course is more nearly like one would travel over in touring with irregular turns, a few hills, and different types of road surface. To be able to cover 200, 300 or 400 miles on the average road course at a high rate of speed is a triumph of which to be proud and the car that can do it is one which will very likely stand up well under the wear and tear of ordinary service.

The second class of racing from which much benefit may be derived is speedway and motordrome racing. On a speedway, an extremely high rate of speed can be attained, as everybody knows, and to keep this up for any considerable distance is extremely destructive on the car, the exceptionally high speed more than making up for the comparative smoothness of the course. Besides the strains on the car are regular and insistent, and only the car of the highest and best type of construction can stand the strains without weakening. What better test to find the cars of this quality could one demand?

Dirt track racing, it must be admitted, is hazardous, and is not to be commended. This type of racing, however, does provide an extremely hard test for machines, because of the irregularities and roughness of the surface of the track. A dirt track race, properly conducted, need not be extremely dangerous, but it cannot be denied that improvements in conducting these races are necessary.

The last class of racing mentioned is 24-hour racing. This is a most spectacular and thrilling form of sport and undoubtedly provides the greatest test of the strength of the modern motor car that human ingenuity could devise. To think of a machine tearing around a dirt track at a speed of 50 miles an hour or thereabouts, for hour after hour, over a course which is full of ruts and bumps after the first few hours of racing is to think of something which in the early days of the motor car would have considered impossible, but which is now not only probable but has been accomplished, proving the cars that can do it are the ones which will stand up in the hands of owners. And what is needed more than tests to try out the strength of cars; to weed out the poor ones and retain the good ones? The good cars will hold up and the ones that will not hold up are not wanted. Here is the way of separating the two classes.

No one can deny that racing has been of great value in developing the motor car. Everyone who knows anything concerning the history of the car will admit that. If it has been of value in the past in improving the breed of cars, it will be so in the future to just as great an extent. The car of today is a wonderful creation but it is not perfect. And, undoubtedly, it will not be perfect for a long time to come. The engineering problems of the motor car today—and it is needless to add that there are a very great number—can be solved, as in the past, by testing the devices to overcome the difficulties in strenuous racing contests.

Another thing which is not solved to

# Speed Contests as Aids to Design

## Advantages of the Sport and Methods of Minimizing Accidents Suggested—Classes of Races

the satisfaction of the majority of motorists is the tire question. To know how to make a car easy going on tires is an education in itself. To win races, a car must be as sparing as possible on tires and by degrees, engineers have designed cars which are evenly balanced in all respects and consequently extremely easy on tires. An example of this is the case of a car which recently traveled 500 miles at well over 70 miles an hour and changed the tire on one wheel but three times, the other three tires lasting throughout the entire 500 miles. This applied to the touring car makes the owner realize what racing has done for him. And there is still room for improvement on the tire question.

What developed the demountable rim, which is now considered indispensable, but racing? To the credit of racing must also be placed the development of the torpedo body. And other things could be mentioned which are now considered necessities on good cars, which are the result of manufacturers' racing experience. Just as it has brought out all these improvements in the past, so, racing will bring out many others in the future.

Successful racing is the greatest advertising for a motor car the industry ever has known. Every motorist and all those interested in machines follow with interest, the great races of the country, and it may be stated that those, now only interested in motor cars are the eventual buyers. Thus, the winner is certain of being repaid a thousand-fold for the time and money expended in preparation for a race. A good car may lose once or twice through hard luck, but it will triumph eventually. The world is quick to forget the failures, but the successes are remembered a long time after the event comes off. Example after example of the advertising value of races in the past and present could be given. It is sufficient to say that the present popularity and high reputation of many of America's leading cars, is due mostly to their successes in the past and that one car, little known in a certain section of the country, was instantly lifted to a high position among the leading cars by a brilliant racing victory in that part of the land. The idea that popular interest in motor racing is slackening, is absurd, as the immense crowds which show up at the great road and speeding events, amply prove.

The conduct of certain race meetings held in the past has been open to censure. It is foolish to claim that racing conducted in a haphazard way is beneficial to the industry. Certain precautions must be taken with regard to the car, the driver and the course.

In the first place, the car must be as

structurally perfect as it can be made before it should be allowed to go on the race course. All parts which are in any way worn, should be replaced before the race begins and the parts of the car which pertain to its control and the safety of the car and the driver, such as brakes, steering gear, etc., should be carefully tried out and tested before the race.

Accidents in motor racing are far too numerous and many of them can be avoided. The chief cause of accidents is allowing inexperienced and careless men to drive the cars. Driving racing cars is a profession and only those who are proficient should be allowed to take part. It will be noticed that the majority of the fatalities which occurred during the past season, happened during practice and that very few took place in the races themselves. This proves that they are due in the majority of cases to carelessness or recklessness. When a man is in a race to win, he is neither careless nor reckless, but attends strictly to business. If the same care was exercised in practice, the number of fatalities and accidents would be materially reduced. Accidents caused by structural weaknesses in the cars themselves are becoming less and less frequent and will continue to be less frequent as the cars near perfection.

Many accidents are due to poor condition of courses. A bad turn; an unlooked for rut when the car is traveling at terrific speed; an oily spot; anything which tends to make the going poor, is liable to cause a bad accident when running at high speed, and is only one more reason why it should be made imperative that the course be put in perfect condition before the commencement of a race.

Racing should be continued. The French people have realized their mistake in dropping it and are taking it up again with

great enthusiasm. They realize now as we in America have realized all along that it is still and will continue to be beneficial to the industry. Motor racing is, to a certain extent, dangerous, but so is football, aviating, ballooning, yachting and other kindred sports of that sort. Properly conducted, it is not extremely hazardous, and under the proper conditions, such as having competent drivers, good cars and proper courses to race upon, it can be made reasonably safe.—C. W. Schlingheyde.

### LIGHT ON FRICTION DRIVE

In the March 21 issue of Motor Age, on page 36, it was stated in answer to Inquirer, Vicksburg, Miss., that friction transmission is claimed to have been used in motor cars for about 10 years. Since this article appeared additional information has come in which shows that the application of this kind of drive to self-propelled vehicles is at least 12 years old. The Buckeye Mfg. Co. has employed this method of transmission since the first Lambert cars appeared in 1900. It is stated that the patent held by the Buckeye company and that of the Cartercar Co. were not granted on the same date, and further that they were not on the same inventions, inasmuch as J. W. Lambert's patent covered the friction-drive feature and not a component part. The Lambert patent was sustained in the Waltham case in May 1909 and judgment for \$1000 was paid. It is stated that at the present time the Lambert people have a suit pending against the Cartercar Co. which is active in the courts. Tests covering different friction materials involving practically every known element have been made in the Lambert laboratories and the results are said to have been in all cases in favor of the aluminum disk.

### AIRLESS TIRE INQUIRY

Caldwell, Texas—Editor Motor Age—Are the airless tires advertised a success on average roads; also, how many miles will they run on average roads with careful driving, on a light car?—B. I. Gilley.

Motor Age has no record of official tests of tires mentioned and would be glad to hear from its readers on the subject.

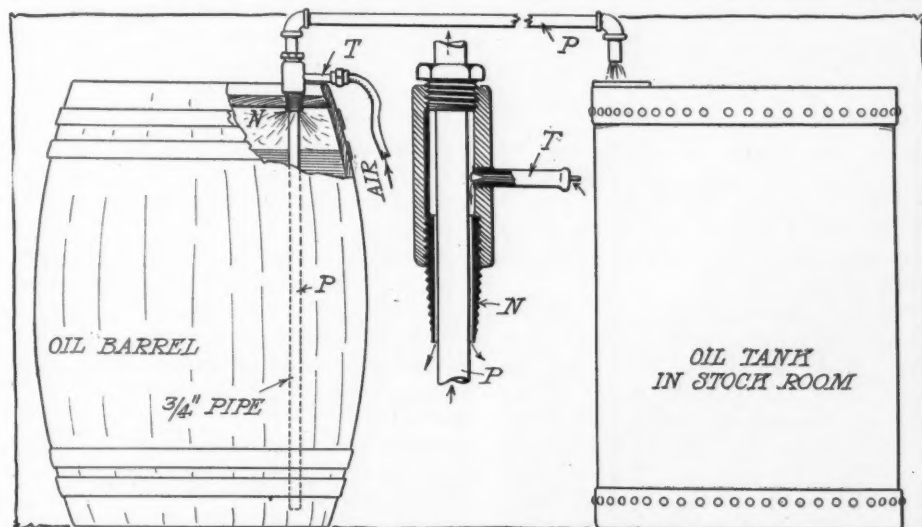


FIG. 4—TRANSFERRING OIL FROM BARREL BY COMPRESSED AIR

## Cadillac Adjustments

### Regulation of Carbureters Given in Detail and Oiling System Described

**C**HICAGO, Ill.—Editor Motor Age—1— Explain how to adjust a 1910 Cadillac carbureter.

2—Explain the automatic oiler used on the Cadillac 30.

3—Describe adjustment of the 1912 Cadillac carbureter.

4—What was the Cadillac output in 1911? The Ford?—Subscriber.

1—The carbureter used on the 1910 Cadillac cars is illustrated in Fig. 5.

When it is certain that this carbureter requires adjusting, proceed as follows:

First, close needle valve 22 and then open it three-quarters of a turn. Place the spark and throttle levers on steering wheel in the correct position for starting, and start the motor. Allow the motor to run several minutes until air intake pipe between the exhaust pipe and carbureter is warm its entire length. Set the adjusting screw 19 so that the motor runs about 250 revolutions per minute with spark and throttle levers in this position.

Next, close needle valve 22 a little at a time until the motor begins to miss, due to a lean mixture. Then open the needle valve a little at a time until the motor again fires regularly. After this adjustment has been correctly made, needle valve 22 should not again be moved during the carbureter adjustment.

Next, with the throttle still closed, pull the spark lever on the sector to C and speed the motor up to about 500 or 600 revolutions per minute by pulling the throttle lever down a little. With a pencil slightly depress the leather air valve 7. If the motor speeds up, it indicates that the spring 8 is too stiff. This should be weakened by loosening the lock nut 11 and slightly unscrewing the nut 10, being sure to again lock the lock nut 11 after the adjustment has been properly made.

If, on the other hand, the motor slows down immediately upon holding the leather air valve down slightly, it indicates that the spring 8 is too light. This may be made stiffer by loosening the lock nut 11 and screwing up on the nut 10, being sure as before to lock the lock nut 11.

When the tension of the leather air valve spring 8 is correct and the leather air valve is slightly depressed, no change will be noticed in the speed of the motor for a few seconds, and then it will begin to run slower.

With the adjustments made for low and intermediate speeds, next consider high speed. With the spark lever still on center, open the throttle wide, having previously loosened the lock nut 13. Screw the nut 12 first down until the motor slows up because of too much air. Then up until the motor speeds up and beyond until motor slows up very slightly. Then lock

the nut 13. By cutting the air down to a point a little less than seems to give the highest speed when motor is running idle, it will be found that the motor will pull and pick up better, although the car may not run quite so fast as it would if the carbureter were given a little more air.

The motor never should be allowed to run idle with spark at or near center and throttle open longer than is absolutely necessary to make this adjustment.

In very cold weather it may be found necessary to slightly increase the opening of the needle valve 22 if the adjustment has been made in a warm place.

An adjustment has been provided for

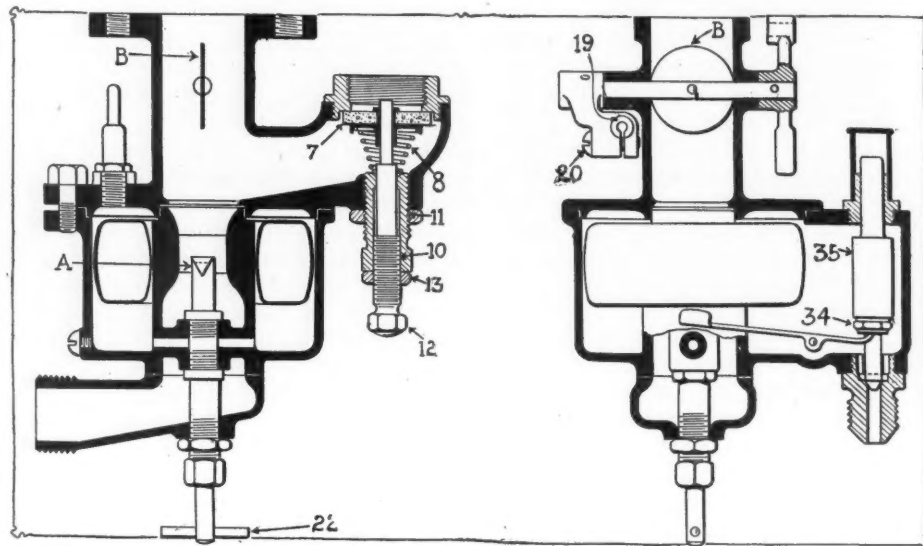


FIG. 5—ADJUSTMENTS OF CADILLAC 1910 CARBURETER

the needle valve, which admits the gasoline into the float chamber. The weight 35 on this valve should be so adjusted that the gasoline level will be maintained in the float chamber at a point so that the gasoline will not run out of the spraying nozzle. The best action will be obtained when the chamfered portion in the top of the spraying nozzle is about half-filled with gasoline as shown by dotted lines at A, or it may be as much as 1-32 inch below that point. The adjustment will not have to be altered excepting when the needle point or needle seat becomes badly worn.

If gasoline runs out of the carbureter after the motor has been standing, it indicates one of two things. Either there is dirt under the gasoline inlet needle or the float is not properly adjusted. In the latter case the gasoline level should be lowered by adjusting the float as above directed.

A warm air pipe is provided, running from the exhaust pipe of the motor down to the air inlet of the carbureter. This is for the purpose of assisting the vaporization of the gasoline at extreme low speeds and is beneficial at all speeds in cold weather.

For extreme high speed work such as track racing, it is well to remove the warm air pipe entirely.

2—The lubricating of the Cadillac 60

motor is by automatic splash system. The system takes care of the five crankshaft bearings, the connecting rod and camshaft bearings, cylinders, pistons, etc. The crankcase is divided by walls A, Fig. 2, into four compartments. In the bottom of each compartment there is a depression or well B. The crankcase always should contain sufficient oil so that each of these four wells will be from three-fourths to entirely full and so that the splashes C, which are attached to the connecting rods, will dip into the supply and throw the oil over the parts to be lubricated. On the left side of the motor there is a lubricator tank or reservoir. In this lubricator there

is a double-acting force pump. One movement of the pump plunger forces the oil through the feed pipe up to the sight feed on the dash. The oil drops to the bottom of this sight feed and from there it is drawn by the other movement of the pump plunger and forced to the third compartment of the crankcase to maintain the supply there.

As before stated, the splashes at the lower ends of the connecting rods throw the oil all over the inside of the motor and that which is not utilized in the lubricating drains down the inside walls and into the sloping troughs D at the side. These troughs carry the oil from one compartment to the other so that the supply is maintained uniformly in each.

The adjustment for the oil supplied to the crankcase may be so regulated that the quantity in the wells will be maintained as before mentioned. The supply is governed by the length of the stroke of the plunger of the lubricator pump. The longer the stroke of the pump plunger, the more oil is forced through the feed pipe.

On the top of the lubricator, there are two notched collars. The upper one is the adjusting collar attached rigidly to the plunger. The lower one is the locking collar. To adjust the stroke of the plunger, first loosen the locking collar. Then to

increase the supply of oil, turn the adjusting collar to the right, screw it down. Doing this gives a longer stroke to the plunger. To decrease the supply of oil, turn the adjusting collar to the left, screw it upward. Doing this shortens the stroke of the plunger. After making the adjustment one should be sure to lock it with the locking collar.

Commencing with the later 1909 cars, the method of adjusting is slightly different although the principle is the same. On these latter, instead of there being the collar, there is a hole through the plunger. With a piece of wire or anything suitable the plunger may be turned and its stroke lengthened or shortened as before directed.

The quantity of oil which should be supplied to the crankcase through the sight feed depends, of course, upon the amount the motor is consuming. It therefore will be realized that it is impossible to give any set rules as to just how much should be fed. As a fair basis for calculation it is suggested that the pump plunger be adjusted so that it will deliver about one drop of oil into the sight feed at each movement. This is for ordinary driving. For specially fast work or for long, hard pulling it will be well to increase it to about two drops for each movement of the pump plunger.

There is still another consideration.

chamber to the waterjacket of the carbureter fall to become hot, it should be disconnected at the combustion chamber and cleaned out.

Second—Move the spark lever to its extreme retarded position.

Third—Move the throttle lever to its extreme closed position.

Fourth—Be sure that the air valve C, Fig. 6, closes tightly. This can be assisted by turning the air valve adjusting screw on the dash as far as possible to the "More Fuel" side.

Fifth—Adjust the throttle stop screw F so that the engine will run about 300 r. p. m., or preferably a trifle slower. The speed can be determined by counting the number of times some one of the cam blocks raises, by holding the finger on the block, or the loudest exhaust report can be counted, having in mind that each time any given cam block raises or each time that the loudest exhaust report occurs represents two revolutions of the motor.

Sixth—Move the spark lever to "Battery C" or center. Bear in mind, however, that when C, meaning center, is indicated on the center of the sector at the steering wheel, it means "Battery C" and not "Magneto C." Later cars are marked "Bat. C" and "Mag. C."

Seventh—Adjust the slow speed gasoline adjusting screw A by turning it to the left to the point where the engine surges or runs unevenly. Then turn it to the right until the engine stops surging and runs evenly, but be sure to stop turning the adjusting screw as soon as the engine stops surging.

Eighth—Adjust the air valve spring G by means of the air valve adjusting screw until the valve C is as light as possible on its seat, yet without allowing any air to leak through the valve C.

Ninth—Move the spark lever to its extreme retarded position.

Tenth—Open the throttle to a point so that the gasoline needle valve roller H will be over or opposite the first cam spring adjuster D.

Eleventh—Turn the cam spring adjuster D to the right until the engine misses some explosions. Then turn it slowly to the left until the engine fires all of the charges and just commences to accelerate.

Twelfth—Move the spark lever to "Battery C" or center.

Thirteenth—Move the throttle lever to its

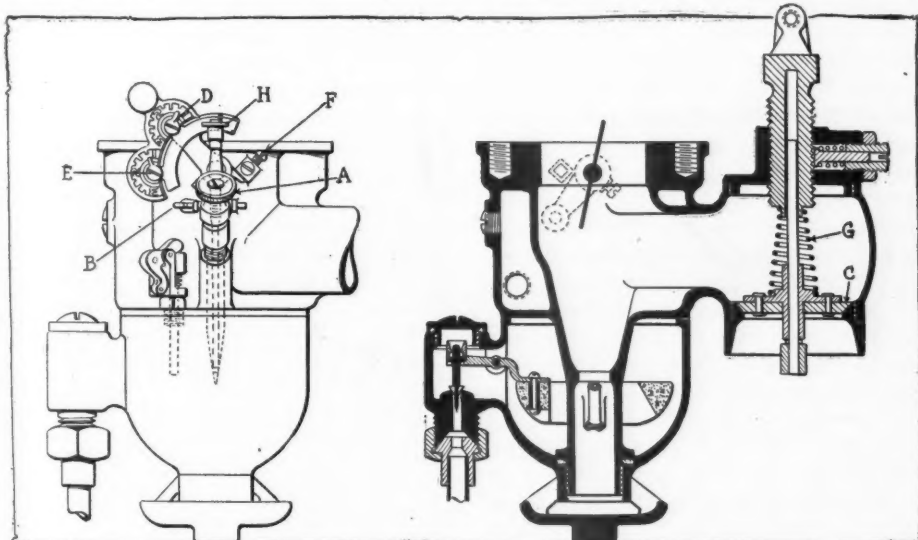


FIG. 6—ADJUSTMENTS OF SCHEBLER MODEL L CARBURETER

The Cadillac lubricating system is declared to be very economical and sometimes persons who have driven other cars are inclined to lubricate too freely. This also must be avoided as too much oil will cause carbon deposits in the cylinders and combustion chambers, on the piston heads and on the spark plugs.

3—When it becomes necessary to make a general adjustment of the model L Schebler carbureter used on the 1912 Cadillac, Fig. 6, proceed as follows:

First—Start the motor as usual, using the Delco ignition system, and run it from 5 to 10 minutes, or until the carbureter becomes warm and is in running condition. Never try to adjust the carbureter when the engine is cold. Should the hot water pipe which runs from the water jacket of the combustion

extreme closed position.

Fourteenth—Adjust the slow speed gasoline adjusting screw A by turning it to the left to the point where the engine surges or runs unevenly. Then turn it slowly to the right until the engine stops surging and runs evenly. Be sure to stop turning the adjusting screw as soon as the engine stops surging. This re-adjustment is made necessary for the reason that when the first cam spring adjuster D is moved in either direction it slightly changes the slow speed adjusting needle at closed throttle position.

Fifteenth—Move spark lever to its extreme retarded position. Open the throttle lever to its extreme open position so that the needle valve roller H is over or opposite the second cam spring adjuster E.

Sixteenth—Turn the cam spring adjuster E to the right until the engine misses some explosions. Then turn it slowly to the left until the engine fires all of the charges and just commences to accelerate.

4—The Cadillac output in 1911 was said to be 12,000 cars. The Ford output is advertised as 40,000.

## Paper Tells Polarity

### Litmus Paper for Finding Positive and Negative Terminals

COUNCIL BLUFFS, IA.—Editor Motor Age—Some time ago I read in Motor Age about a chemically-treated paper that would tell the positive or negative terminal of a storage battery by simply dipping the paper in the solution which would change the color of the paper and thus indicate the positive or negative terminal. Will Motor Age inform me where this paper can be purchased?—A. B. Wager.

The paper to which you refer is blue litmus paper and it can be purchased at almost any drug store or from any chemist or drug supply house. In order to learn the polarity of charged electric wires using blue litmus paper as an indicator, arrange the wires so that they will rest about 1/4 to 1/2 inch apart, then dip a strip of the litmus paper in water and lay the strip across the wires as indicated in Fig. 3. A pink mark or stripe S will appear where the paper lay on the positive wire. Do not let the wires come into contact, for a short circuit will occur.

Another form of pole-indicating paper also may be employed which is acted upon by the negative wire; it is made as follows: Dissolve 1 to 2 grams of phenolphthalein in 10 c. c. of alcohol of 90 per cent; add 110 c. c. of distilled water and impregnate porous paper, blotting paper, with the milky solution. While the paper is still moist draw it through a solution of 20 grams of sodium sulphate in 100 c. c. of distilled water. Dry at moderate heat and cut paper into narrow strips. For use moisten the paper and place ends of wires on it, at a distance of about 1/4 to 1/2 inch. A red spot or stripe will then appear at once at the negative pole.

### PREVENTION OF RUST ON RIMS

Jourdanton, Tex.—Editor Motor Age—Will Motor Age kindly answer a few questions through the Clearing House columns?

1—How can I make a paint for motor car rims to prevent rust?

2—How can I make a proper paint and varnish for a car and how is it applied?—F. W. Earnest.

1—Mix glycerine and powdered or flaked graphite to a creamy consistency and apply to the rims of the wheels after they have been thoroughly brightened up by sand-papering.

2—Motor Age would advise leaving the production of paint and varnish to the paint manufacturer, for it generally can be more cheaply bought ready made than homemade. The proper application of paint and varnish to the body of a motor car is an art, and the process could not be clearly described in the limited space of the Readers' Clearing House columns. It is a long, laborious process requiring much skill on the part of the painter.

**COUNTS Cars at Shows**—The Goodyear company has counted the cars exhibited at sixty-four shows during the winter and finds they total 6,597.

**New Wisconsin Club**—The Twin City Automobile Club has been organized at Neenah and Menasha, Wis., important paper mill and manufacturing cities in central Wisconsin at the head of Lake Winnebago. The charter membership exceeds 100. The club has been incorporated and will affiliate with the A. A. A. through membership in the Wisconsin State A. A.

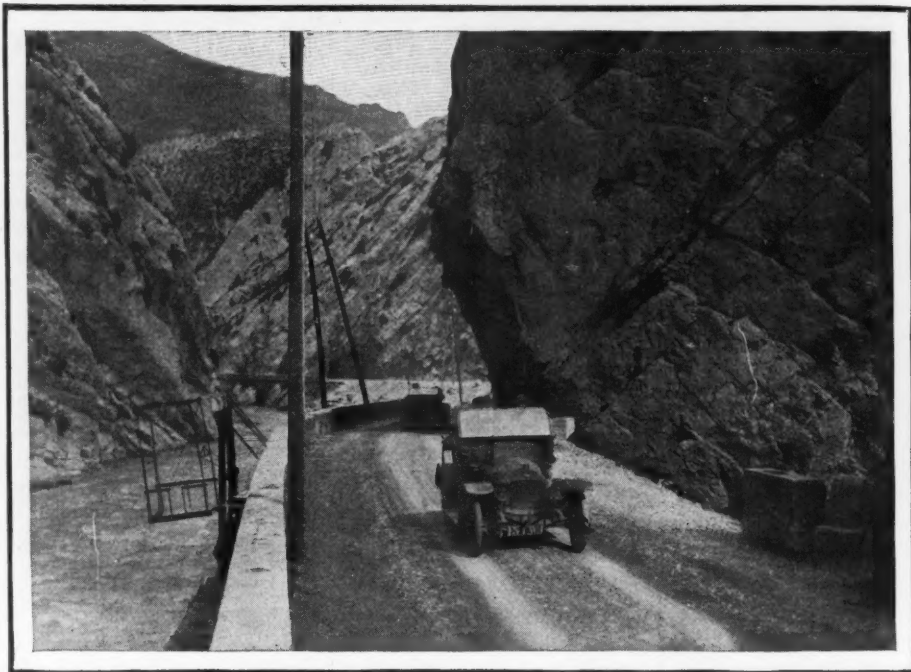
**Minnesota's Definition**—A ruling has been made by the state legal department on the Minnesota vehicle law that a chauffeur is a person who drives a car on public streets as the employe of another, whether his employment is incidental or occasional. The ruling resulted from complaints to the examining board of arrests of persons driving cars without licenses who were not professional chauffeurs. Another ruling is fire and police department cars need not be registered or the drivers either.

**Peoria Club Election**—At a meeting of the recently organized Peoria Automobile Club of Peoria, Ill., new officers were elected as follows: President, E. J. Case; vice-president, W. C. Collins; secretary-treasurer, C. E. Ulrich; directors, W. E. Hull, W. C. Roberts, Thomas Webb, R. H. Johnson, Carl Block, F. B. Waugh, H. B. Pinkerton, H. G. Herget, S. K. Hatfield, and S. L. Nelson. The first effort of the new organization will be to secure the improvement of the road through the Narrows, leading from Chicago to the southwest, down the valley of the Illinois river.

**Speed Trap Warning**—The Motor League of Rhode Island has posted notices for the protection of motorists, particularly those coming from other states, against being trapped by the authorities for violation of the speed ordinances. The signs are 24 by 30 inches and read: "Slow to 15 Miles, Closely Built Up." This wording is selected because it is similar to the language of the law. It is the desire of the league to aid motorists in keeping within the speed limits. Locations for the signs have been selected near the city line of Providence on the most important highways leading to this city.

**Pittsburgh After Grafters**—Some of the accessory houses in the Pittsburgh district, aided by the industrial development commission, have opened a campaign against the grafting chauffeur. The larger accessory dealers for some time past have been assessed a 10 per cent commission by the drivers of privately-owned cars for all material purchased, it is said. Many of these men keep books and regularly collect their so-called fees. The scheme endorsed by the industrial development commission and the larger dealers is that the dealers take into their confidence the owners of cars, telling them just how much of a levy is

## FROM the



SCENE ON TOUR OF FRANCE—A PICTURESQUE PASS

demanding by the men who drive their cars and showing up how much these men get independent of the wages paid by the owners.

**Show Helps Club**—The Automobile Club of Syracuse had a booth and did a lot of missionary work at the recent show in Syracuse, N. Y. The officers have decided that it pays, for since then thirty members have been added to the membership roll as the direct result of the effort.

**Club House for Columbus**—To provide larger quarters in which to entertain centennial visitors the Columbus Automobile Club of Columbus, Ohio, has closed a lease for 3 years on the ground floor on the Gay street side of the Virginia hotel. The new quarters will be four times the size of the present club rooms. The room to be occupied consists of the old grill room of the hotel and the old bar. The new rooms will be ready for occupancy by August 1.

**Road Work in Alabama**—Alabama spent \$1,377,689.28 on its roads, bridges and culverts during 1911, and has \$1,250,000 in road bonds not yet expended, according to figures compiled by W. S. Keller, state highway engineer. The figures are based on reports from sixty-four of the sixty-seven counties, Jefferson, Winston and Sumter returning no figures. Bond and tax money expended in this way totaled \$1,156,152.40. Wooden bridges and culverts cost \$130,933.70, while steel and concrete bridges and culverts cost \$91,003.18. This outlay resulted in the construction of 1,005 miles of roadway, the actual cost being \$1,106,152.80. More than half of the total was the graded type of road, 614

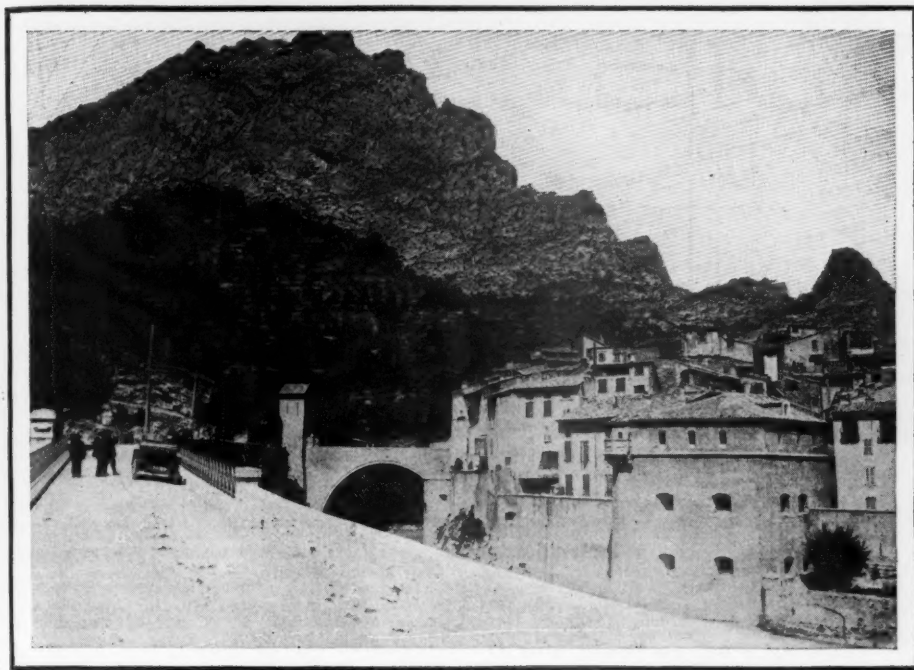
miles of this kind being constructed. Other types had the following totals: Sand-clay, 107; gravel, 217; chert, 49 and macadam, 18.

**To Tour International Highway**—For the first time since its inception, a continuous motor tour is soon to be made over the entire length of the International highway, starting from Miami, Fla., and terminating at Quebec, Ontario, a distance of about 3,000 miles. The party will consist of eight people in three cars and be under the direction of Fred C. Miller representing the Board of Trade and the Automobile and Good Roads Association of Miami, and will be conducted under the auspices of the Touring Club of America and the Quebec-Miami International Highway Association. The start will be made about April 10, it is expected.

**Registration in Washington**—The state of Washington reports there are 12,250 cars registered. The registration in January, 1910, showed 5,136 licensed cars; there were 7,621 in January, 1911, and 11,638 on January 1, 1912. There are more than 200 motor trucks in the state. It is estimated that Seattle has 50 per cent of the cars in the state and Spokane is second in the number of licenses. Farmers and fruit growers in eastern Washington are well represented in the registrations. So far this year registrations show that there is even a better market for cars than in the same period a year ago. It is expected, however, there will be a falling off in the registrations the next 2 months because of objection to paying a full year's license for operating the car until May 31.



# Four Winds



CONTESTANTS IN FRENCH TOUR NEAR NICE

Secretary Howell estimates that about 2,000 originally assigned cars are not now in use, either the owners being delinquent, the cars having been sold or destroyed or shipped out of the state.

**Atlanta Climb April 20**—At a meeting of the Atlanta Automobile and Accessory Association it was decided to hold the Atlanta hill-climb on the Stewart avenue hill April 20. It will be a class C event, under A. A. A. rules and will be open to cars owned in the state of Georgia.

**Blood Hounds Chase Tire Thieves**—The tire thief has made his appearance in central Illinois. B. J. Shanley of La Salle discovered that a set of four tires that he had placed on exhibition in Utica, had been removed. The authorities sent for the Decatur thief-tracking bloodhounds but the animals were unable to strike a trail owing to the fact that the surroundings had been covered with snow and this melted before the dogs came.

**Better Railroad Facilities**—The dealers of Fall River, Mass., have filed a protest with the railroad company there against the facilities given them for removing their cars from trains. The company simply provides a couple of narrow planks and the dealers have to do all the heavy work. Under the present conditions it is difficult and dangerous work to get the cars out of the freight cars. It is claimed that it now takes about fifteen men half a day to get a car out of the freight yards and this costs about \$50. With proper facilities the work could be done by a couple of men in 30 minutes. Since January 1 more than

\$150,000 worth of cars have been unloaded this way. A slight deviation from the skids would cause a machine to topple over and be badly damaged and also hurt those working about it.

**Ohio Will Not Enter**—The Ohio company has decided not to enter its 999 in the 500-mile race at Indianapolis because of the changes that would have to be made in order that the car be eligible. Burman has been released from his contract to drive 999 at Indianapolis, but he will use the car in other events during the year.

**Speedway for Sioux City**—A 2-mile speedway, club house, tennis court and golf links and a launch house will be constructed by the Sioux City Automobile Club of Sioux City, Ia., at an estimated cost of \$40,000. The club has filed articles of incorporation and temporary board of directors composed of the following has been appointed: S. C. Douglas, C. M. Wyckoff, Fred W. Sargent, W. W. Orcutt, Len Lesenich, F. H. Reid, C. A. Kneeder.

**Means Much to Maryland**—Members of the Automobile Club of Maryland are working earnestly for the passage of the Goslin good roads bill. The club has petitioned the farmers as well as city owners of motor cars to urge their respective representatives in the legislature to vote for the bill which provides for an appropriation of not less than \$4,300,000 for the purpose. The club is also backing the Hammond and Benson good roads bill. The first of these provides that the section of the proposed improved road between Baltimore and Washington in the vicinity of Elkridge, be permanently located upon

the bed of the existing turnpike while the Benson bill provides that the location of the said section shall be left to the judgment and discretion of the good roads commission.

**De Palma to Drive Mercer**—One of the latest entries in the Santa Monica road race is a Mercer raceabout which will be driven by Ralph de Palma. Just prior to the Santa Monica race de Palma will be seen in a series of short races to be held at the Paya del Ray motordrome near Los Angeles.

**Motor Car Thieves Active**—As a result of the activity of a band of motor car thieves in Boston of late the police departments of Boston and surrounding cities and towns have been asked to try to round up the gang. Within a few weeks at least a half-dozen cars have been stolen in Boston and no trace has been found of any of them. Rewards have been offered but they have had no effect. Now the police are after the thieves.

**Road Work in Illinois**—The chamber of commerce of Quincy, Ill. has decided to devote its energies to improving the roads leading into that city and has asked the co-operation of all farmers along the respective highways. The Mendon Automobile Club of Adams county has been agitating a regular course of dragging. Excellent results were secured from the use of the drag on a road between Ursa and Mendon and it is planned to drag all of them this year. The Quincy business men will co-operate with the motor club of that city.

**Boosting Waubonsie Trail**—The Waubonsie Trail Association of Marshall county, Illinois, has been organized and farmers along the proposed highway, are expressing their willingness to keep it thoroughly dragged and otherwise improved. The trail will run via Tonia, Lostant, and Wenona, in moving from Ottawa to Peoria. A branch of the trail is proposed from Bloomington to Starved Rock, joining the Chicago-Peoria road at Wenona. The north and south trails, will be governed largely by the action of the state for a great highway to connect Chicago and St. Louis, which is now agitated.

**Lowers Nevada Record**—Ernest J. Freeman in a Lozier has clipped 16 minutes from the former record of 2 hours 21 minutes, held by his brother-in-law, Arthur Keddie. While the distance between the two towns is only 68 miles, the trail connecting the two municipalities presents almost every known obstacle of western travel. Freeman's time of 2 hours 5 minutes is a remarkable one, when contrasted with the other modes of transportation. The stage formerly running from Fallon to Reno occupied 2 days en route and the best schedule that a combination of the Southern Pacific and a low-gauge gasoline road has been able to effect is a trifle over 3 hours. The trip was an exciting one.



# Current Motor Car Patents



## PATENTS ISSUED MARCH 26.

1,020,977—Vehicle Wheel. Luther L. Gregg, Jr., Lonejack, Mo. Filed December 5, 1910. Serial No. 595,715.

1,020,994—Protector or Goggles. James W. Leasure, Bradford, Pa. Filed May 20, 1911. Serial No. 628,480.

1,021,011—Chuck for Holding and Centering Gears. George W. Sponable, Syracuse, N. Y., assignor to the Brown-Lipe Gear Co., Syracuse, N. Y., a corporation of New York. Filed March 2, 1908. Serial No. 418,696.

1,021,012—Strength-Testing Apparatus. John O. Stanley and John Lewis Perkins, Holyoke, Mass., Assignors to B. F. Perkins & Son, Inc., Holyoke, Mass., a corporation of Massachusetts. Filed July 20, 1910. Serial No. 572,907.

1,021,031—Igniting Mechanism for Explosive Engines. Alexander Winton and Harold B. Anderson, Cleveland, Ohio, assignors to the Winton Motor Carriage Co., Cleveland, Ohio. Filed April 4, 1905. Serial No. 253,742.

1,021,036—Speedometer. Leon E. Blanchard, Boston, Mass., assignor to Reliance Speedometer Co., Boston, Mass., a corporation of Maine. Filed February 24, 1910. Serial No. 545,685.

1,021,037—Oil Can Holder. Frank Washburn Duffum, Louisiana, Mo. Filed November 25, 1911. Serial No. 662,342.

1,021,039—Carbureter for Internal-Combustion Engines. Gogu Constantinescu, Bloomsbury, England. Filed August 21, 1911. Serial No. 645,250.

1,021,072—Vehicle Tire. Charles Adam Schenkel, Wabash, Ind. Filed September 3, 1910. Serial No. 580,291.

1,021,079—Mixing Attachment for Carbureters. Alfred C. Stewart, Los Angeles, Cal. Filed October 31, 1910. Serial No. 590,040.

1,021,219—Igniting Apparatus for Gas Engines. Ellhu Thomson, Swampscott, Mass., assignor to General Electric Co., a corporation of New York. Filed April 5, 1906. Serial No. 310,034.

1,021,220—Vaporizer for Internal-Combustion Engines. Ellhu Thomson, Swampscott, Mass., assignor to General Electric Co., a corporation of New York. Filed July 14, 1906. Serial No. 326,171.

1,021,240—Pneumatic Hub for Vehicle Wheels. Tossanus Duysens, Maastricht, Netherlands. Filed April 20, 1911. Serial No. 622,208.

1,021,246—Vehicle Tire. Wilhelm A. Giermann, Blencio, Iowa. Filed October 11, 1911. Serial No. 654,145.

1,021,247—Wheel Hub. Friedrich William J. Goersch, Cleveland, Ohio. Filed January 16, 1911. Serial No. 602,929.

1,021,251—Spring Suspension for Road-Vehicles. Leonard Harris, London, England. Filed June 17, 1911. Serial No. 634,182.

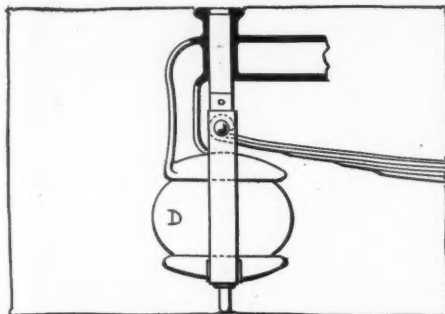


FIG. 1—HARRIS SPRING SHACKLE

1,021,254—Muffler. Herman H. Larkins, Princeton, Ky. Filed September 2, 1911. Serial No. 647,311.

1,021,275—Headlight for Motor Cars. Anton Stepanek, Newcastle, Ind. Filed October 31, 1911. Serial No. 657,787.

1,021,279—Headlight-Controller. Frances E. Thompson, Arlington, Mass. Filed March 2, 1911. Serial No. 611,782.

1,021,282—Fluid Clutch. Paul Weeks, Los Angeles, Cal. Filed March 20, 1911. Serial No. 615,784.

1,021,293—Instrument Set for Electrical Distribution Systems. Vincent G. Apple, Dayton, Ohio, assignor to Dayton Electrical Mfg. Co., a corporation of Ohio. Filed May 11, 1907. Serial No. 373,056.

1,021,307—Vehicle Wheel Tire. Luke G. Fleming, Tarrytown, N. Y. Filed January 25, 1911. Serial No. 604,523.

1,021,310—Air-Pump. Herbert J. Hawthorne, Guy B. Wyatt and Otto P. Warner, Cleveland, Ohio; said Warner assignor to R. H. Reynolds, Milwaukee, Wis. Filed March 6, 1911. Serial No. 612,659.

1,021,320—Rotary Air-Compressor. James R. Mason, North Versailles township, Allegheny county, Pa. Filed September 25, 1911. Serial No. 651,237.

1,021,326—Hydrocarbon Vaporizer for Internal Combustion Engines. James William Mowbray, Gleichen, Alberta, Canada, assignor, by direct and mesne assignments, to the Hydrocarbon Vaporizer, Limited, Fort William, Canada. Filed July 3, 1911. Serial No. 636,696.

1,021,355—Spring Wheel. John C. Deckard and Isaac L. Deckard, Vincennes, Ind. Filed May 23, 1911. Serial No. 628,930.

1,021,422—Tire for Vehicle Wheels. Tod J. Mell, Youngstown, Ohio, assignor to the Republic Rubber Co., Youngstown, Ohio. Filed December 23, 1910. Serial No. 598,979.

1,021,435—Vehicle Fender. Edgar M. Thompson, Richmond, Ind. Filed November 8, 1911. Serial No. 659,107.

1,021,440—Resilient Wheel. Rex E. Arnold and Clarkson P. Hockett, Kouts, Ind. Filed June 29, 1911. Serial No. 636,045.

1,021,458—Bichromatic Lamp. Jesse Howard Fry, Rochester, Pa. Filed May 23, 1911. Serial No. 629,000.

1,021,459—Vehicle Wheel. Edward A. Glenn, Chicago. Filed January 20, 1908. Serial No. 411,697. Renewed August 11, 1911. Serial No. 643,699.

1,021,462—Acetylene Gas Generator. Frank R. Hudson, Windsor, Mo. Filed January 31, 1911. Serial No. 605,710.

1,021,470—Motor Car Body. Louis W. Oster and Frank J. Miller, Cleveland, Ohio; said Oster assignor to said Miller. Filed March 20, 1911. Serial No. 615,706.

1,021,493—Engine-Starter. Gerald S. Sutliff, Perry Creek township, Vigo county, Ind. Filed July 8, 1911. Serial No. 637,479.

1,021,506—Circuit-Breaker for Magnetos and the Like. Richard H. Cunningham, New York, N. Y. Filed February 8, 1911. Serial No. 607,269.

1,021,512—Motor Vehicle Frame. Powell Evans, Philadelphia, Pa. Filed May 7, 1907. Serial No. 732,332.

1,021,515—Resilient Wheel. Carroll D. Galvin, Merchantsville, N. J., assignor of one-sixth to Charles Jacobsen, one-sixth to Eugene S. Cochran, and one-sixth to Amandus F. Jorss, Washington, D. C. Filed January 8, 1912. Serial No. 669,975.

1,021,577—Gas-Engine Piston. Fulvio De Fazi, Providence, R. I., assignor of one-half to William Douglass Blossfield, Providence, R. I. Filed November 10, 1911. Serial No. 659,588.

1,021,591—Resilient Tire. Christian Friederich, Tripp, S. D. Filed September 10, 1911. Serial No. 650,115.

1,021,612—Acetylene Gas Generator. Wyndham William Lewis, Highgate, London, England. Filed February 25, 1911. Serial No. 610,812.

1,021,616—Pneumatic Tire. James McGinnis, Johnstown, Pa. Filed October 11, 1911. Serial No. 654,052.

1,021,624—Motor Starting Mechanism. Alonzo F. Olds, Chicago, Ill. Filed May 3, 1911. Serial No. 624,726.

1,021,683—Piston Rod and Valve-Stem Packing. William D. Kesseling, Atchison, Kans. Filed March 9, 1911. Serial No. 613,276.

1,021,697—Explosion Engine. George Frederick Mort, Ealing, London, England. Filed October 1, 1910. Serial No. 584,887.

1,021,711—Vehicle Wheel Tire. Benjamin C. Swinchart, Youngstown, Ohio. Filed September 9, 1911. Serial No. 648,648.

## MOWBRAY Hydrocarbon Vaporizer—

No. 1,021,326, dated March 26; to James William Mowbray, Gleichen, Albert, Canada. As shown in Fig. 4, this patent applies to a carbureter design, in which the fuel is maintained in the reservoir R, at the level indicated by the dotted line. When the suction in the inlet pipe P, of the motor, causes the pressure in the mixing chamber C to fall below that of the atmosphere, air flows through apertures in the conical tubular member M, forces open the spring controlled valve V, and travels through the mixing chamber C and upward through the inlet pipe of the motor. As the incoming air passes the spray nozzle N, liquid fuel is drawn through communicating passages, from the reservoir R, and mixed with the air to form a fuel mixture. There is a needle valve N, provided, to adjust the amount of liquid fuel to be contained in the mixture. The mixing chamber M is surrounded by a jacket into which heat is admitted through the con-

duit D; this is to facilitate vaporization of the liquid fuel in the mixture. The throttle T governs the admission of mixture to the engine.

### Pneumatic Cushioned Spring Shackle—

No. 1,021,251, dated March 26, to Leonard Harris, London, England. This patent relates to a means of improving the spring suspension of a vehicle by interposing a pneumatic pad D, Fig. 1, between the spring-ends and the frame of the vehicle.

### Thompson Headlight Controller—

No. 1,021,279, dated March 26; to Francis E. Thompson, Arlington, Mass. This patent relates to a mechanism for automatically turning a dash headlamp so that it will reflect its light in the direction in which the steering wheels of the vehicle are turned. As illustrated in Fig. 3, a vertical shaft T rotatably mounted in front of the dash D, is operatively connected to the steering column C by means of elliptical bevel



gears, which cause the lamp to turn slowly at the outset and rapidly as the steering wheel is turned for a large angled turn of the car. The rotatable lamp bracket B may be moved by means of chain and sprockets; and a manually controlled connecting and disconnecting mechanism is provided so that the lamp may be independently turned at will.

### Winton Igniting Mechanism—

No. 1,021,031, dated March 26; to Alexander Winton and Harold B. Anderson, Cleveland, Ohio. This patent covers a self-starting switch for multiple cylinder engines, arranged as indicated in Fig. 2. The diagram includes the manually-operated circuit making and breaking device D in the battery circuit, and an engine operated distributor R in the secondary circuit which automatically selects the proper spark gap when the engine is at rest and the battery circuit is opened and closed by the manually operated make-and-break device independently of the engine operated circuit interrupter.



# Legal Lights and Side Lights

## WOULD RAISE BAY STATE FEES

THE biggest fight that the motorists of the Bay State ever had on their hands is now about to begin as a result of the action of the committee on roads and bridges of the Massachusetts legislature last week when it made two decisions which in effect mean that the owners of motor cars not only may have to pay for road maintenance but road construction as well.

The first report given out was that no legislation was necessary upon the application of the highway commission for an additional appropriation to continue the work of building state highways. The commission reported that its annual appropriation for constructing roads ends with this year and so additional money was needed for building. It asked for \$5,000,000 to cover a period of 5 years beginning with 1913 to be spent at the rate of \$1,000,000 a year. The last 5 years the appropriation was \$500,000 a year.

Following that announcement came the report that the committee had decided to report a bill for an increase in the fees of motor cars so that with the exception of the very small cars there would be a raise all along the line. This was all the more surprising when Colonel W. D. Sohier of the highway commission at the hearings stated that the present fees were large enough to pay for road maintenance. However, under the proposed new scale it was believed it would net the state perhaps \$750,000 a year, and it is believed that out of that sum enough money may be had for continuing the construction work as well

as the maintenance. Here is the way the proposed scale works out:

H. P.	Present Fee.	H. P. Increase.	Proposed New Fees.
5 to 19	\$ 5	30c per H. P.	\$4.80
19 to 29	10	40c per H. P.	11.60
29 to 39	15	50c per H. P.	19.50
39 to 49	20	75c per H. P.	36.75
50 and over	25	\$1 per H. P.	50.00

According to these proposed rates, there is an increase from 10 to 100 per cent. Under the present fees the state got nearly \$500,000 from the motorists last year and the agitation for an increase seemed all the more inexplicable.

It is believed that the idea of the committee was to place a higher rate on the motorists and that when the fight came in the legislature there would be a compromise that would net the state a good sum. However, after agreeing to report this bill some statisticians got busy and by some process of figuring seemed to work out their figures to show that the expenses would fall short instead of increase, and so for this reason the bill has not yet been sent to the legislature.

It is understood that the committee also has in mind a project to put the fees for commercial cars on the same basis as pleasure vehicles as a result of the highway commission's activity.

## MISSISSIPPI COLLECTING

Mississippi has adopted its first license law. After June 1 all motor cars owned in the state must be provided with a state license tag. Cars under 25 horsepower must pay a fee of \$5; over 25 and not more than 40 horsepower, \$25. The new statute provides that no further taxes on motor cars will be permitted by municipalities or counties. Cars owned in other states hav-

ing license laws may be operated for 30 days in Mississippi without paying the state license.

## MARYLAND LEGISLATION

Members of the Automobile Club of Maryland are jubilant over the passage by the legislature of the Percy bill calling for a \$40,000 appropriation for the improvement of the road between Perryville and Elkton. Many amendments were offered by the club to the Goslin bill, one asking that instead of a fee for a whole year on cars when securing licenses that a pro rata per month be instituted. Other amendments sought are for the use of mechanical horns in the city during daytime and to prevent the use of the muffler cutout in the city. The club also wants an amendment to the amendment of the city charter which calls for an extra motor tax. Should the bill as it now stands pass, motor car owners would be liable to three taxes, license, state and city, which would mean an annual tax of from \$50 to \$75.

## WOULD FIGHT WHEEL TAX

Determined efforts on the part of the city authorities of Washington, D. C., to collect the so-called wheel tax has resulted in an attempt to raise funds to fight the matter in the courts. The matter has been before the courts on several occasions and each time the motorists have lost the fight. It is claimed that new grounds have been discovered for an appeal, and Leroy Mark, vice-president of the southeastern division of the Touring Club of America, is now appealing to the motorists of Washington to contribute to a fund to take the case up higher.

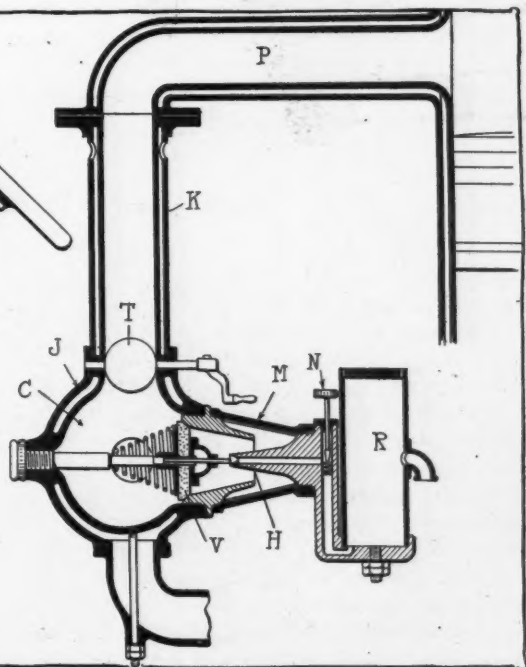
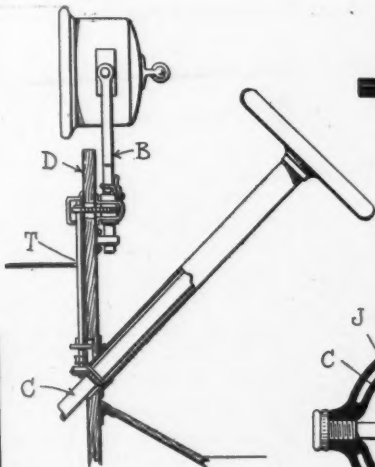
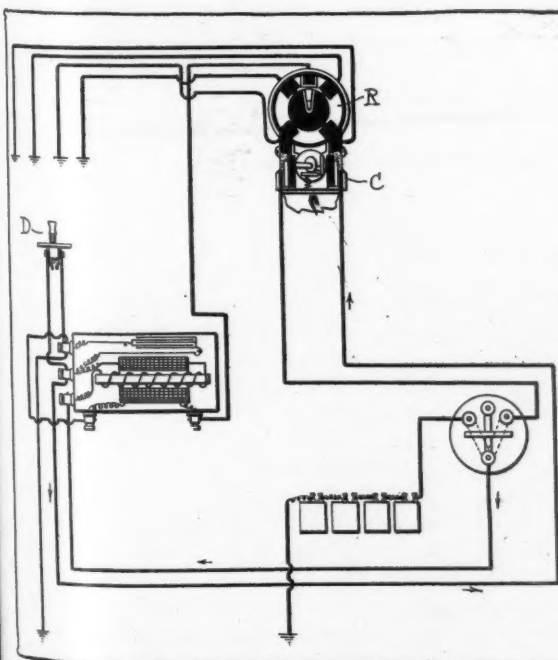


FIG. 2—WINTON IGNITING MECHANISM FIG. 3—THOMPSON HEADLIGHT CONTROLLER FIG. 4—MOWBRAY HYDROCARBON VAPORIZER

# Timken Offers Three Truck Outfits

IN addition to a complete line of front and rear axles for pleasure and commercial motor cars the Timken-Detroit Axle Co. now has three new truck outfits comprising combination rear axles and

**Detroit Concern Also Continues Its Line of Axles for the Passenger Vehicle**

clutch that meshes with notches in the hub; the advantage claimed being that longer life should be obtainable by driving through the steel of the hub than through the cast steel. In the hubs of the differ-

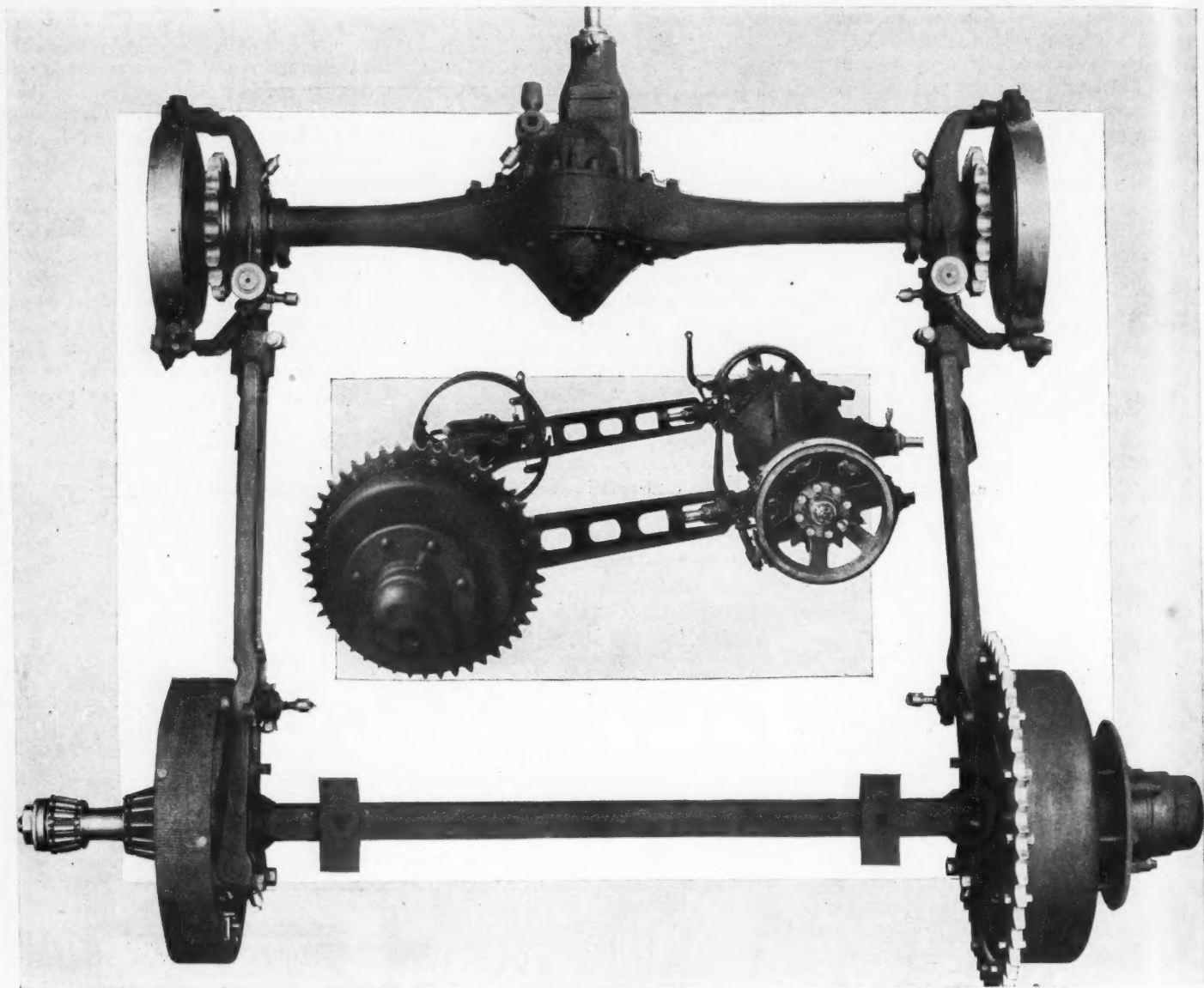


FIG. 1—THE NEW TIMKEN TRUCK EQUIPMENT WHICH IS MADE IN A COMPLETE LINE OF SIZES

jackshafts for chain-driven vehicles, and though there are no radical changes in the various types of axles manufactured by this company, several improvements are to be found which add to the simplicity, durability and strength of the product.

In the front axles for pleasure cars, for instance, the yokes at the ends of the cross rods are of a tapered design instead of angular, giving additional strength and an improved appearance. The yokes are fitted with hardened and ground steel bushings, having an adjustable tapered bearing on the yoke pins; and the yoke pins are secured in the arms with bicycle keys. The bearing surface has been increased, and dust caps are fitted over the

heads of the pins. Steering balls are ground true and smooth.

#### Brakes Made Larger

As for the rear axles for pleasure cars the brakes of the larger axle have been increased in diameter from 14 to 17 inches; while those of the smaller axle also have been increased, from 12 to 14 inches, and the internal brakes are adjustable without removing the wheels. The drive and pinion shafts now are of nickel steel with the dogs on the ends of the drive shafts forged integral. A notable change in the larger pleasure car rear axles is that of driving the rear wheels through a steel flange that bolts to the hub flange, instead of through a dog

essential the cups now are adjustable instead of the cone, which permits of the cones being pressed onto the shafts, thereby reducing wear. The torque rod pins are provided with adjustments to prevent them from rattling. Driving gears and pinions are ground in to match up and promote smooth and silent operation.

A resume of the special features comprised in the make-up of the Timken axles, together with the illustrations shown herewith, will give a fair idea of the Timken construction. In Figs. 2 and 3, right hand illustrations, is shown a new type of front axle designed for larger pleasure cars which also may be used on light commercial vehicles. It is a steel drop forging of

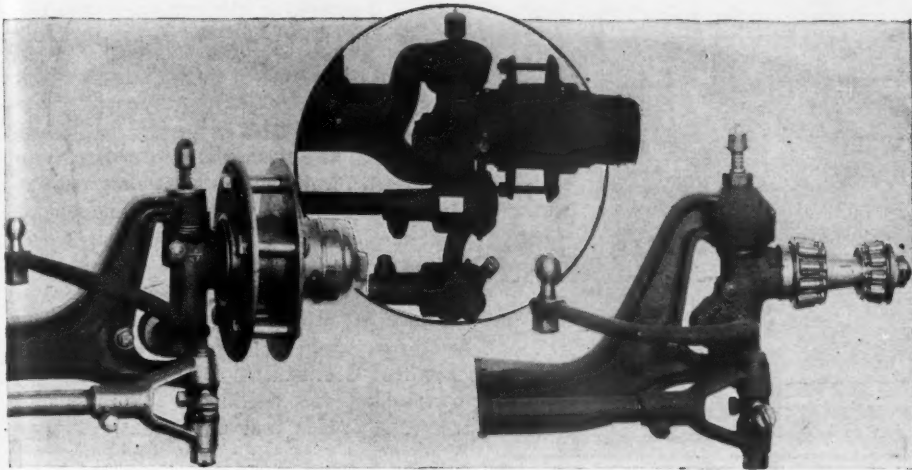


FIG. 2—STEERING KNUCKLE OF TIMKEN TRUCK AND PLEASURE CAR AXLES WITH PLAIN AND ROLLER BEARING KNUCKLES

I-beam section, heat-treated to give strength and toughness. The steering knuckles are of large size forged from nickel steel and also heat-treated. All bearing surfaces, including axle spindles, steering knuckle bolts, bushings and bearings are ground to size and are held to strict limits of .001 of an inch or less. Timken roller bearings are supplied on wheel spindles and in the steering knuckle heads. Accurate and safe adjustments are provided for both wheels and steering knuckle bearings. Adjustable stops are provided to regulate the throw of the steering knuckles.

Cross rod yoke bearings are of large size, and have hardened and ground steel bushings to provide for wear. Dust-proof devices are fitted at all moving points, including the steering knuckles, steering cross yokes, and wheel bearings. Steering arms are of large diameter, oval in section and taper, giving great strength but a light and pleasing appearance. The hubs are of pressed steel with a removable outer flange and a long flange bearing and deep spoke socket. All important nuts are castellated and locked with cotter pins,

and all nuts are semi-finished. The steering ball-pin is furnished in three sizes, 1, 1 1/8 and 1 1/4-inch, hardened and ground to size; and the lower end fits into the steering arm with a taper and is locked into position with a castellated nut and cotter pin.

**Tilted Spring Seat**

The feature of the axle is the tilted spring seat, which is designed to carry the axle at a position to produce caster effect in steering. Grease cups and oil grooves are provided for all moving surfaces. The steering knuckle pin is locked to the steering knuckle by a key carrying bearings at the extreme end of the yoke; and also it has an adjustment to take up wear. The axle is furnished in standard 56-inch tread and with standard drop, but on contracts of sufficient size special drops to center can be furnished.

By the use of adjustable bearings wherever possible, and hardened and ground steel bushings at other places, the axle is practically indestructible, it is claimed, as all wearing parts can be adjusted or replaced at a minimum of expense. The smaller axles are almost identical in de-

sign and construction, except that a plain bearing steering knuckle pin is employed, and there are a few other slight differences.

**Timken Floating Rear Axle**

Timken rear axles are of a floating type and the latest design is shown in Fig. 4. It is comprised of a continuous pressed steel housing with ground steel sleeves for bearings welded into position and extending well in beyond the spring seats, making a strong reinforcement; the carrier comprises a complete power unit with all gears, bearings and differentials integral; the driving shaft is of chrome nickel steel, machine-finished throughout its entire length, ground and accurately fitted, so that when locked the entire construction, from the squared end of the shaft in the differential to the wheel, becomes a solid driving unit.

The hub is provided with liberal spoke sockets and designed to take one and three-quarter spokes maximum. Brake drums are of a generous diameter and made of heavy pressed steel which is accurately machined. Both brake levers are brought into the center and fitted with compression springs and stand pipes with oilers. Gears are drop-forged, machined, hardened, heat-treated, and ground in, by processes many of which are covered by basic patents. Spring seats have a wide bearing, are designed for swiveling, and are divided laterally, and fitted with large grease cups.

Hardened and ground torque rod pins, swiveling in hardened and ground bushings are employed and have an adjustment for end play. Every moving part is protected from dust and special attention is given to the forward pinion shaft bearing, which is most exposed. The rear cover plate of the gear housing is of pressed steel, ground to an accurate fit to the housing, provided with special molded rubber gaskets, and with filling and oil level plugs. All moving parts of

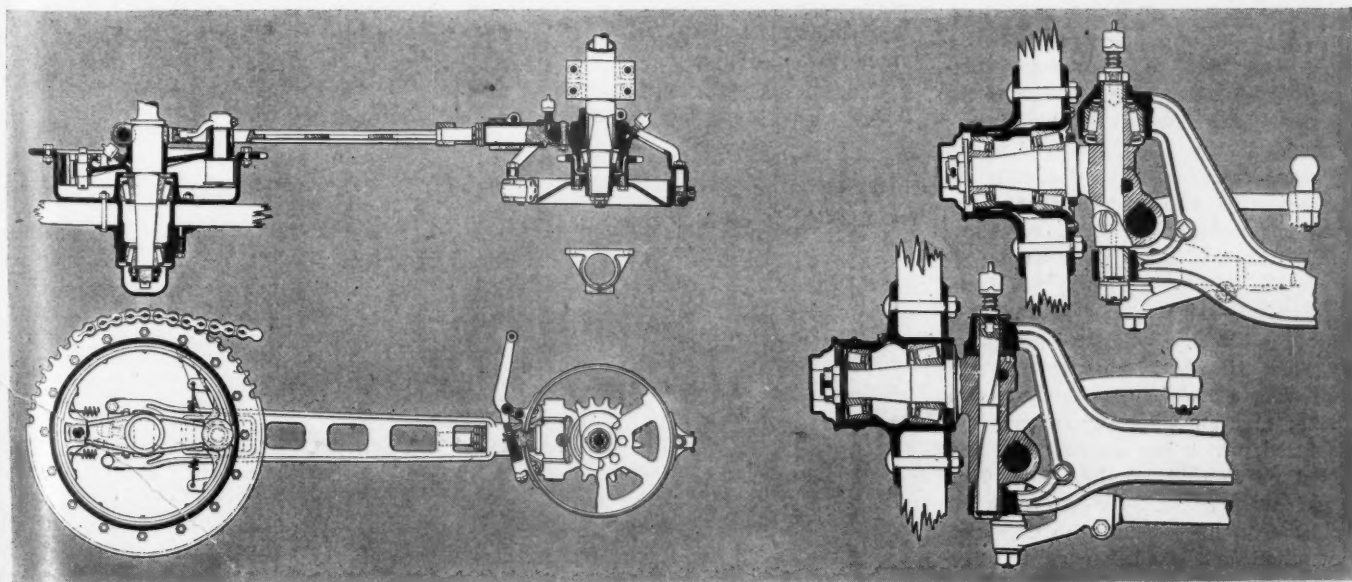


FIG. 3—DETAILS OF TRUCK EQUIPMENT DESIGN—SECTIONS OF PLEASURE CAR AXLE ENDS

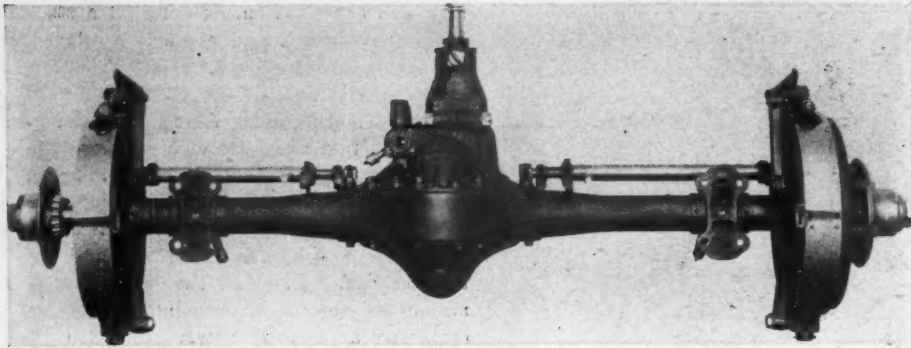


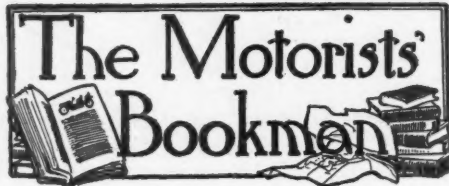
FIG. 4—THE NEW TIMKEN FLOATING REAR AXLE WHICH HAS HUB FLANGES SECURED TO THE AXLE SHAFTS

this axle are on Timken adjustable roller bearings. All essential parts are heat-treated, and, in many instances, several times and by different formulæ. These heat treatments are checked by a complete laboratory equipment.

The three truck outfits now manufactured by the Timken companies are made in three sizes, for from 1 to 2, 3 to 4 and 5 to 6-ton chain-driven motor vehicles. Flexibility is a feature of these constructions, and a glance at the illustrations will show that the outfit is simply a clever combination of a heavy solid rear axle and a pleasure car rear axle construction for the jackshaft. Timken roller bearings are used in the rear wheel hubs and jackshaft. The rear brake drums are of pressed steel with the rear sprocket bolted to the brake drums, and readily detachable for replacement.

An important feature of the construction is that it permits disassembly of the whole equipment from the end of the axle, without taking down the car. The radius rods are of cast steel, pivoted at both ends and provided in addition with a swivel joint. Hardened and ground bearing pins are employed in the pivot ends of the radius rod, and grease cups are provided for the lubrication. The rear brake carrier is mounted on a bracket, independent of the radius rod, and is provided with a sliding support in the radius rod to prevent cramping. Jackshaft brakes are carried on independent brackets; the brake drums are detachable; the housing is of pressed steel; shafts are of nickel steel, heat-treated, and the design is, in fact, practically identical with that of the pleasure car rear axle construction shown herewith. An external adjustment is provided for the jackshaft brakes. The jackshaft sprockets are designed so that the chain line is directly over the bearing.

The rear axle is a rectangular drop forging. There are deep spoke sockets in the hubs; and an unusually strong hub cap is fitted, which has a round end and is bolted on instead of threaded. This hub cap is made unusually strong so as not to be damaged by contact with curbs, garage pillars and the hub caps of other vehicles, while moving in and out of crowded garages or in congested traffic.



#### 1912 Year Book

THE "Daily Mail Year Book for 1912," in its twelfth edition, edited by Percy L. Parker, and published by the Associated Newspapers, Ltd., London, contains a fund

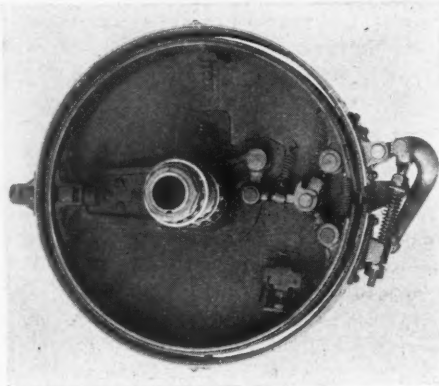


FIG. 5—TIMKEN BRAKE DESIGN

of general information on the questions of the day in all parts of the world, and much statistical information on the United Kingdom.

#### Handbook and Diary

The "Trader and Diary" for 1912, published by the Cycle Trade Publishing Co.,

London, while following the form of previous editions, has been amplified and the different departments brought up-to-date. A new feature of this handbook is the M. T. A. protected list with list of its members. The technical information is in tabulated form, and the book also contains in compact form a vast amount of general information.

#### Maps of Scotland

Bartholomew's maps of Scotland, seven in number, are specially designed for the motorist, and known as "Quarter-Inch Maps of Scotland." This series includes Sutherland and Caithness, Inverness and Skye, Aberdeen and Grampians, Glasgow and Oban, Forth and Tay, Galloway and Lower Clyde, and the border country. First-class roads, good and passable roads are shown, and the roadside inns and hotels are indicated as well as other leading features.

#### List of Foreign Cars

A practical little handbook appears under the title of "A List of Motor Cars, 1906-1912," by W. C. Bersey and published by the Technical Publishing Co., London. This list includes practically every foreign car manufactured since 1906, together with the maker's horsepower rating, the R. A. C. horsepower rating, bore and stroke and number of cylinders, the year of manufacture of each model and the maker's list price of same. In addition to this information is a taxation table in French and English.

#### For the Motor Cyclist

Handy as the motor cycle itself and timely as a spring morning comes the third edition of "Hints and Tips for Motor Cyclists" by one who knows whereof he writes, signing himself Road Rider. The uninitiated may learn therefrom how to buy, and all how to care for, how to repair a motor cycle, how to locate troubles and how to remedy them. Clear and concise in expression, compiled in a manner to make each suggestion quickly accessible, a fund of practical information is compressed into a volume of convenient size to be the constant companion of those for whom it is written. Published by Iliffe & Sons, Limited, 20 Tudor street, London, England.

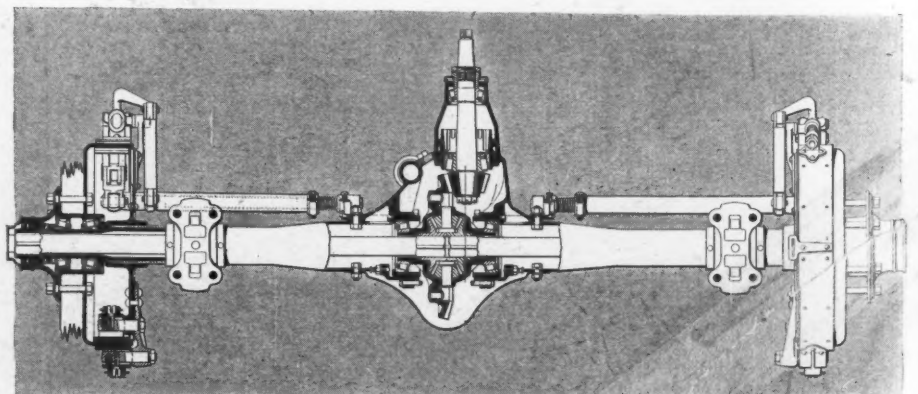


FIG. 6—A SECTION OF THE NEW IMPROVED TIMKEN ROLLER BEARING AXLE WHICH IS A FLOATING TYPE



# The Motor Car Repair Shop

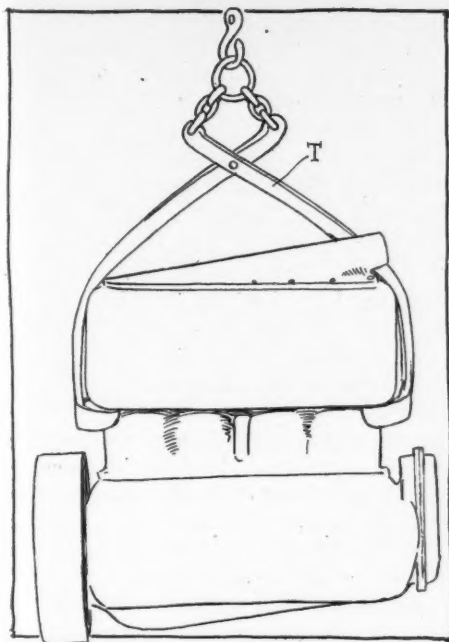


FIG. 1—USEFUL MOTOR TONGS

IN Fig. 1 is shown a pair of useful tongs specially designed for gripping motors and facilitating their transfer about the shop. Tongs of this character could be used to advantage in many repair shops throughout the country in place of the rope slings most commonly employed. They are quickly applied and removed, may be used with absolute safety and without damage to the more delicate motor equipment such as the spark plugs, petcocks and manifolds; and they insure a strength, durability and safety not to be obtained from the rope slings. Rope, or even chains, must be applied with considerable care and good judgment, to prevent them from slipping.

An inexperienced workman is almost sure to make a fair share of errors in applying a rope sling.

**Always Carry a Rope**

It is a good plan to always have a length of rope or chain in the tool box or under the seat of the car for use in cases of emergency such as the two cases described below.

While out driving recently the writer had the misfortune to skid into a post, breaking the starting crank off close up to the shaft. This made it impossible to start the engine from the crank, and as the motor was one of the vast majority which will not, even under provocation, start on the spark, a quandary presented itself.

Another car came along just at the right moment and the driver volunteered his assistance and proceeded to overcome the difficulty. He took a 15-foot length of rope from his car and attached one end to his rear axle, the other end to the front

## Rope Useful in Car Equipment—A Handy Funnel Design—An Emergency Gasoline Leak Repair

axle of the disabled car. For towing long distances ropes should be fastened to some part of the frame, but for this purpose this method of attaching to the axles was sufficient. After the two cars were connected in this manner the good Samaritan climbed into his seat and started his car very slowly. At the same time the driver of the rear car let his brake off and his clutch in on high speed so that the motion of the rear wheels was transmitted through the differential, transmission gears and the clutch to the flywheel, thus turning the engine over, producing the same effect as cranking it from the front.

After the car had been towed only a short distance, about 50 feet, with the spark only slightly advanced as in cranking, the motor started under its own power. The clutch then was thrown out and the tow rope removed.

Had the second car not come along at the opportune moment the motor could have been started by jacking up the rear wheels and spinning one of them by hand, with the clutch in and the gears set for high speed forward. If this is done care must be taken to change the gears to neutral and to disengage the clutch before removing the jack from the rear axle.

Another instance in which a length of rope saved much time, worry and triple-strength language, was experienced when the car ran into an extremely bad portion of road full of deep mud holes. A rear wheel dropped into one of these holes so far that the rear axle rested on the solid ground at the edge of the hole. The car could not pull out of this predicament without severely straining the whole machine. As the rear axle rested on the ground it was of course impossible to get a jack under it to lift the car, so the following expedient was resorted to:

A piece of rope was fastened around

the rear axle and the frame extension above the spring, binding them securely together so that the spring would have no flexibility. Then the jack was placed under the frame and the rear wheel raised up out of the mud hole to the level of the regular road surface. Then, after a short search, an old post was found beside the road and placed longitudinally under the rear wheel to keep it from dropping back into the mud. The jack was removed, the rope was untied and the car once more started on its way.

**A Handy Funnel**

A novelty in the way of a combination funnel and strainer was seen recently in a private garage. It was so simply made and so effectually served its purpose that directions are given below for the benefit of any reader who would care to make one like it.

Procure an ordinary tin funnel of large capacity, the quart size will do, and cut off the lower part of the funnel as indicated in Fig. 2. Then procure an ordinary tin salt or pepper shaker with a screw top. The shaker should be about 1½ inch in diameter. Cut off or melt out the bottom of the shaker. The funnel should be cut off at a point that will leave the opening of the same diameter as the shaker. The two parts then are soldered together as shown in the illustration, with the perforated screw cap at the bottom. A small sheet of very fine brass gauze is procured and a circular section cut out so as to just fit into the bottom of the perforated screw cap. If a finer strainer is desired a circular piece of chamois may be inserted between the gauze and the cap which may be easily removed at any time.

This same device with the cap removed also makes an excellent wide-mouthed funnel for filling the radiator.

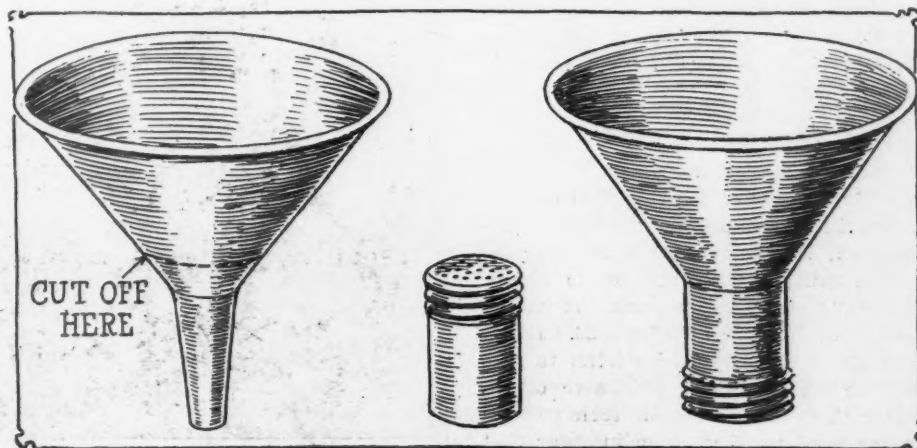


FIG. 2—METHOD OF CONSTRUCTING HANDY FUNNEL



# Among the Makers and Dealers



**OHIO Building New Roadster**—The Ohio Motor Car Co., of Cincinnati, announces a new Bullet roadster. It will have 115-inch wheelbase.

**B. A. Gramm's Plans**—B. A. Gramm, vice-president and general manager of the Gramm Motor Truck Co., denies he will be connected with the new Willys combination as consulting engineer, but as yet his plans have not been formulated.

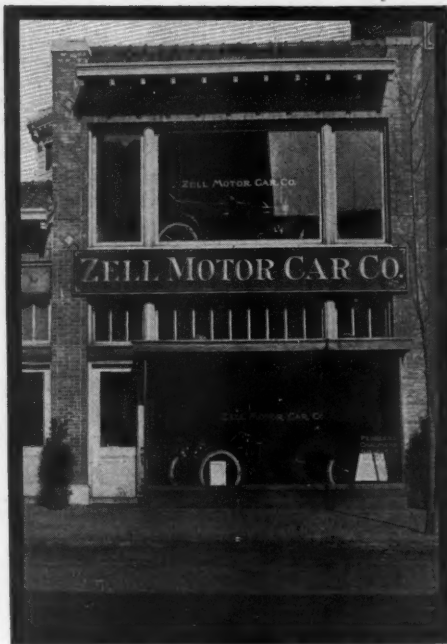
**Wayne Davis' New Connection**—W. Wayne Davis and L. E. French, of Philadelphia, both pioneers in the motor industry, have taken over the agency of the Kline Motor Car Corporation, of York, Pa., and Richmond, Va., under the firm name of the Klinekar Sales Co. New quarters have been secured at 514-516 North Broad street.

**Moves to Fulton, N. Y.**—The Parker Transmission Co., of Springfield, Mass., which controls a patent for the manufacture of gears of solid jaw construction and adaptable to any power requiring a change of speed, has moved from its home on Wilbraham avenue, where it was located the past 2 years, to Fulton, N. Y. The larger number of employes of the company have also moved to that place to continue with the company.

**New Car Planned**—The Anger Engineering Co., of Milwaukee, has been organized by Walter A. Anger, with a capital stock of \$10,000. Mr. Anger has been working on a new type of pleasure car for 2 years and is now ready to start the manufacture of it. In the new corporation Mr. Anger has associated with him Bernhard F. Anger and Carl Luenzmann. The capitalization will be considerably increased as the operations of the company progress.

**Aplico Changes**—The Apple Electric Co. has moved its Detroit headquarters from 1005 Woodward avenue to 1310 Majestic building. F. G. W. Sudrow, formerly in charge, has been called to the factory at Dayton to take the position of sales manager. He will be succeeded in Detroit by H. J. Shire, formerly of the Roller-Smith Co. Mr. Shire will become the district manager. J. C. Slager formerly sales manager of the company has been appointed assistant manager.

**Illinois Association Growing**—At the monthly meeting of the executive committee of the Illinois Automobile Dealers' Association, fifteen new members were reported, bringing the total up to eighty. The next meeting of the committee will be held in Springfield, Ill., April 23. It has been also decided to send a letter to each nominee for state and legislative offices, asking them to make public their position on the good roads question in order that all motorists of Illinois will be in a posi-



STORE OF THE ZELL MOTOR CAR CO., WASHINGTON, D. C.

tion to vote upon this question. As soon as the replies are received they will be tabulated and a copy sent to each car owner in Illinois.

**Tyer Company Orders Plant**—The Tyer Rubber Co. of Andover, Mass., has placed the contract for the building of its new tire factory. Work will be started at once and it is expected that the factory will begin producing tires by August 15. The company will employ 400 hands and have a capacity of 600 tires a day. The Tyer Rubber Co. was established in 1856 and manufactures druggists' rubber goods and

molded rubber specialties. This makes the second new tire factory added to Massachusetts this year, the Walpole Rubber Co. having also embarked in the tire business.

**More New England Shows**—Motor shows were held in New Bedford, Mass., and Manchester, N. H., last week, and, according to the reports, there was a large attendance at each place and the shows were very successful. A representative line of cars were exhibited at each city.

**New Truck Plant Ready**—The Leitner Motor Truck Co., of Kenton, Ohio, will open its factory in about 4 weeks, occupying the Carter building on West Franklin street. L. Leitner, head of the concern, closed a contract with the Kenton Commercial Club for the plant. It is expected to employ about twenty-five men from the start.

**More Swinehart Salesmen**—The Swinehart Tire and Rubber Co., of Akron, Ohio, has added five salesmen to its branch forces and has made several new connections throughout the country. B. M. Griffiths and J. B. Taggart have been added to the Philadelphia branch and R. A. Kerr, G. W. Hansen and J. W. Benton have been added to the Chicago sales force. Raymond Frieze succeeds F. W. Dougherty at Boston; R. F. Frewin succeeds C. W. Harris as manager of the Chicago branch and at New York Mr. Braden succeeds Henry Alden. John R. Allen has been appointed salesman in Ohio, with headquarters at Akron. Rasher & Guyton have taken the agency for the line of Swineharts in southern California with headquarters in Los Angeles. The Burroughs-Morse Corporation succeeds H. D. Burroughs in



APPLE ELECTRIC CO.'S NEW STORAGE BATTERY DEPARTMENT





NEW STORE OF OMAHA CADILLAC CO.



AUTO INN GARAGE, COLUMBUS, OHIO

Providence, R. I. A. A. Parrish has been appointed agent in Valdosta, Ga. The LaFayette Tire Co., in LaFayette, Ind., and the Wilson Vulcanizing Co. in Augusta, Ga.

**Warner Plant Growing**—The Warner Instrument Co., of Racine, Wis., manufacturing the Auto-Meter and other devices, has awarded contracts for the erection of a large addition to care for its growing speedometer business. The new building will be 100 by 100 feet in size.

**Ohio Has Drivers' School**—The Ohio Motor Car Co., of Cincinnati, has included a course of instruction for drivers of Ohio cars, as part of its service department. The course as outlined includes a week spent at the factory following the various parts through the course of manufacture, after which the student is placed in charge of a competent factory driver and taken through crowded traffic during the busy part of the day on Cincinnati streets.

The complete course as outlined covers 2 weeks, although for those who cannot afford to spend that time, a special course of instruction will be crowded into 1 week.

**Duplex Moving to Michigan**—The Duplex Coil Co., of Fond du Lac, Wis., is moving its works to Bay City, Mich., where the Business Men's Association has raised a fund of \$15,000 as a bonus. The company manufactures coils, batteries, magnetos and electric lighting systems and has been located at Fond du Lac, Wis., for 7 years. E. J. Huber is president.

**Increases Stock**—The White Motors Co., of New Haven, Conn., has had such a profitable business that the capital stock of the company has been increased from \$5,000 to \$20,000 to allow the company to take care of its enlarged business. A reorganization of the company followed and new officers were chosen, as follows: Percy R. Greist, president; E. H. Dowson, vice-president; W. F. Alcorn, secretary; H. M.

Greist, treasurer. William A. Rutz is general manager. Messrs. Dowson and Alcorn are the new members of the company.

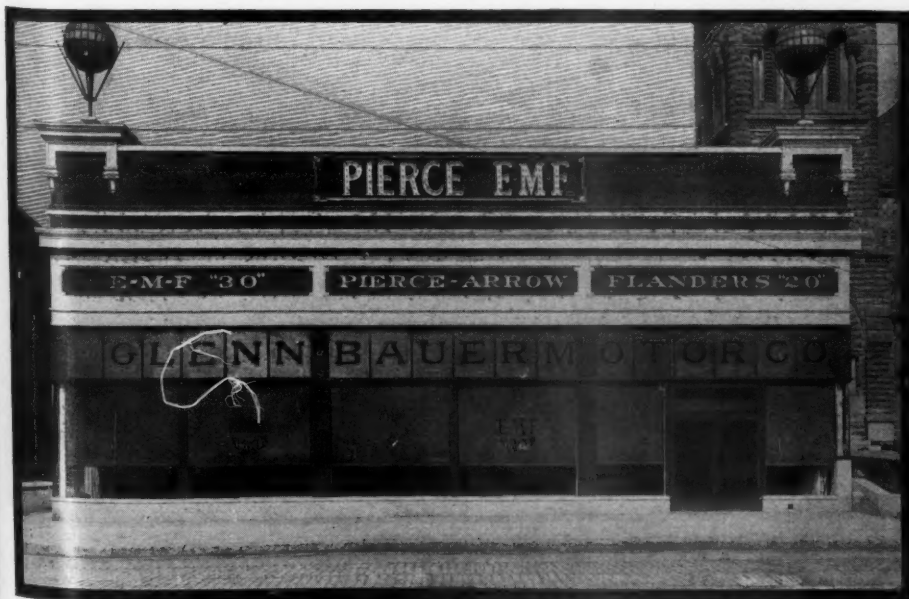
**Tradesman a Philanthropist**—F. H. Mason, vice-president of the B. F. Goodrich Co., of Akron, Ohio, has donated 20 acres of land to the city for a play-ground for children.

**New S. A. E. Headquarters**—After May 1 the New York headquarters of the Society of Automobile Manufacturers will be in the new building of the United States Rubber Co. at Broadway and Fifty-eighth street.

**Job for Eveland**—Announcement is made of a change in the personnel of the Philadelphia Automobile Trade Association, F. W. Eveland, manager of the A. G. Spalding & Brother Co., agent for the King and Stevens-Duryea, having been appointed secretary-treasurer of the organization.

**Woman Patents Windshield**—Anna K. Gilson, of Wilmington, Vt., has just been granted a patent on a rain and windshield for motor cars. It comprises a flexible frame supporting a flexible transparent medium in which is a small opening with a flexible closure, hinged to swing to and fro from this opening. A supporting arm holds the closure in position when wanted. The shield is hooked to the motor car and when not needed may be taken off, rolled up and put away.

**Hoosiers Talk Self-Starters**—The Indiana branch of the Society of Automobile Engineers had an open meeting on the subject of self-starters, in the rooms of the Hoosier Motor Club, in Indianapolis, on the evening of March 28. Among the speakers were R. H. Combs, Prest-O-Lite Co., Indianapolis; J. F. Fitzgerald, Ignition Starter Co., Detroit; Albert Champion, Champion Ignition Co., Flint, Mich.; F. P. McDermott, Remy Electric Co., Anderson and Lon R. Smith, Indianapolis representative Eiseman Magneto Co.



GLENN-BAUR MOTOR CO., IN LOUISVILLE, KY.

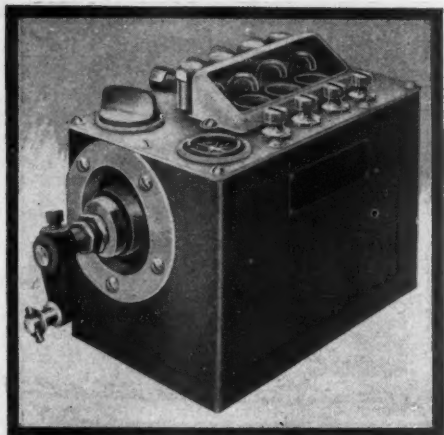


FIG. 1—EXTERIOR OF DETROIT FORCE-FEED OILER

#### Hagstrom Primer

TO make engine starting easy there has been brought out a priming cup intended to be permanently attached in the intake manifold which draws the gasoline into the cylinder by suction. This primer is illustrated in Fig. 4 and is the product of Hagstrom Bros. Mfg. Co., Lindsborg, Kans. The cup is a brass casting about 1 inch in diameter and  $1\frac{1}{4}$  inch in height. It is attached by simply tapping the manifold with a  $11/32$  drill and threading with a  $3/8$ -inch common pipe thread. It is recommended that two of these be employed for a four-cylinder motor, each cup being mounted at the fork of the intake pipe. The lid has a spring-seated valve which allows air to enter under the suction of the motor and also permits the gasoline to be squirted into the primer from a can. It can be also used for introducing kerosene or other decarbonizers.

#### Quick Detachable Terminals.

The annoyance due to breakage of primary wires, especially on timers, and the loosening of secondary terminals has resulted in the production of ignition terminals that are quickly detachable and

# Development Briefs

which may be quickly attached. The Q. D. terminal of the Connecticut Telephone and Electric Co., Meriden, Conn., is made up in two types—one is a primary connector and the other is a secondary connector. These two types with their parts are illustrated in Figure 3. The secondary connector is fitted with a collar or sleeve which covers the end of the wire and makes it safe to handle without getting a shock. To attach, it is simply necessary to push the wire on the rubber sleeve, slip a stud carrying the spring into a hole in the rubber sleeve and fasten with a screw which makes contact with the wire, at the same time swelling the insulation slightly so that it binds inside of the rubber cap. The complete terminal is shown at A with the parts at C. The secondary terminals are made to fit three sizes of wire,  $\frac{1}{2}$  inch,  $\frac{3}{8}$  inch, and  $5/16$  inch. The ball-and-socket connection by which the terminals are allowed to swing to prevent the wire from breaking off is illustrated at B. The ball and socket allows the wire to swivel in any direction and the spring contact is strong enough to prevent its jarring loose. Both primary and secondary terminals are furnished with an adaptor, illustrated at D. The hexagon ball nuts E are made in various thread sizes so they can be screwed on to a spark plug or timing connection in place of those generally used.

#### Detroit Force-Feed Oilers

External and internal views of the standard type of the Detroit force-feed oiler are illustrated in Fig. 1 and Fig. 6. The mechanism as a whole is contained in a steel rectangular box which serves as well for the oil tank. The box is provided with a filler cap, a gauge which shows the quantity of oil in the tank, and a set of

## Detachable Terminals for Ignition Wires—New European Body Design—Detroit Force-Feed Oiler—Hagstrom Suction Primer

sight feeds, one for each cylinder, and all enclosed in a glass. A shaft extending through the side of the box carries a pulley by which power is transmitted from the engine. The method of operation will be seen in the interior view, Fig. 6. The piston B is driven through a bell crank yoke E by an eccentric G on the shaft S, the latter is rotated by means of a gear shown which meshes with the worm on the driving shaft. The piston B lifts the oil from the reservoir and discharges it from the nozzle N in the sight feed. The amount of oil discharged is regulated by the adjusting button on the cover, this button having at its lower end the cam A which controls the throw of the piston B. The lower plunger C takes the oil from the

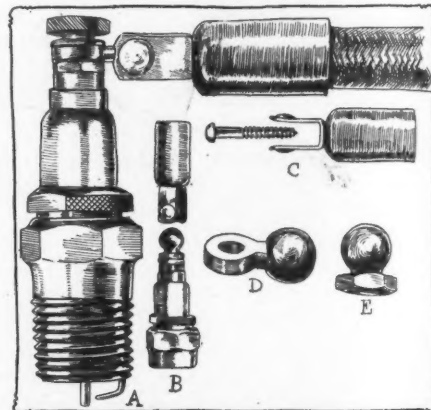


FIG. 3—PARTS OF CONNECTICUT DETACHABLE TERMINALS

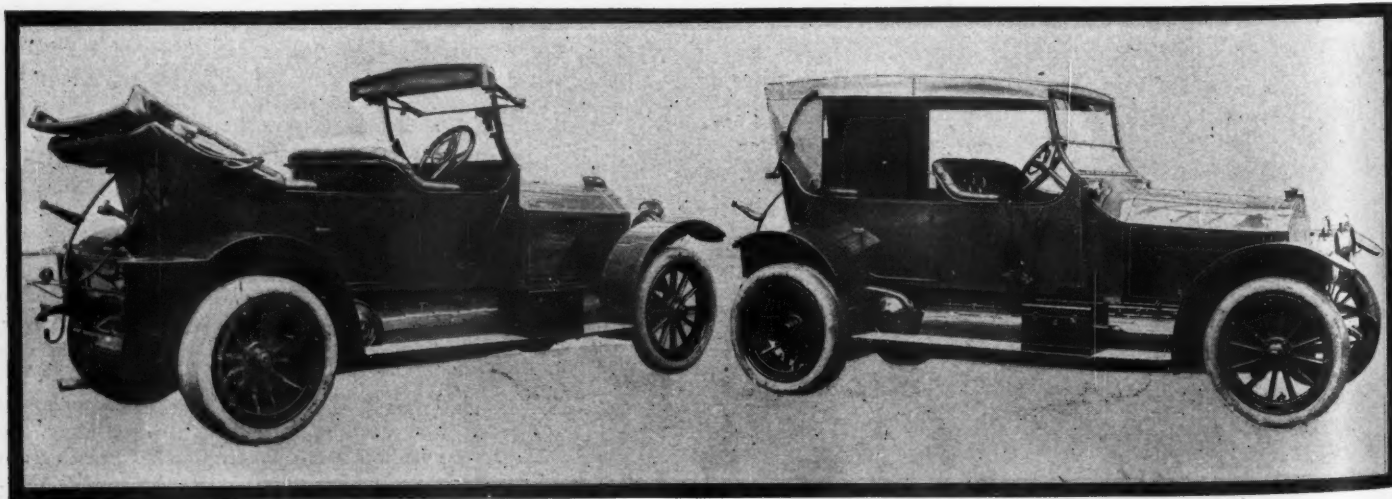


FIG. 2—ROTHSCHILD BODY ON MERCEDES CHASSIS

EUROPEAN body makers are paying much attention to increased luggage carrying capacity and better top arrangement. This is exemplified in the new Rothschild body fitted to the Mercedes chassis illustrated above. The view on the left shows the built-on trunk for clothing, which has, as well, a compartment for tools. Below this is suspended the tanks for fuel and oil, while above it is the inclined rack for spare tires. At the right is shown the car with the top up. The design of the top is such that the side is not obstructed by the usual top bows. The arrangement has the additional feature that the top may be raised or lowered without getting out, an extremely desirable feature in muddy roads.

# Novelties for Motoring

## Three Gun-Metal Finishes—Another Carbon Remover—Renews Shine of Varnish—Coupe-Landaulet for American Cars

pocket in the sight feed chamber under the nozzle and forces it to the point to be lubricated through the tube O. This plunger C is driven by the eccentric F through the yoke D. The yoke and eccentrics are so arranged that the two pistons B and C operate alternately. A port in each piston controls the passages to the other so that each becomes a mechanically operated valve for the other.

Some of the features of the Detroit oiler are that the pistons for any one unit move alternately and the necessity for separate valve mechanism is avoided. The reciprocating motion of the piston is obtained by eccentrics carried on a camshaft from which are worked all the pumping units but the eccentrics for the various units are set at different angles so that the load

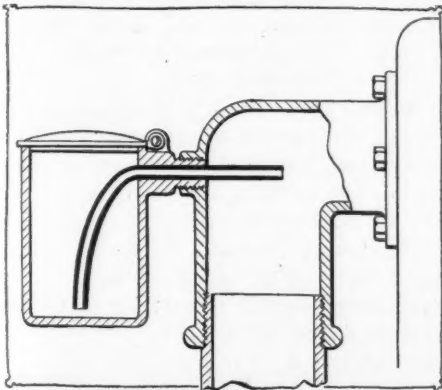


FIG. 4—HAGSTROM SUCTION PRIMER ATTACHED TO MANIFOLD

is nearly constant. The sight feed head gives a wide range of vision. Oil delivery leads come out of the cover instead of the bottom or side so that there is no tendency to leak around the delivery tube.

### Gun-Metal Finishes for Brass

So many inquiries have been received for preparations which would give a gun-metal finish on the brass parts of a motor car, particularly the lamps, that it is a pleasure to record the fact that compositions for giving three different black finishes on brass are manufactured by the Gun Metal Finish Co., Decatur, Ill. The first is a bright gun-metal finish and is a chemical which when applied to brass causes it to turn black. It is said to be easily applied and is especially adaptable for brass lamps and radiators, as the heat from them merely hardens the finish without cracking it. A dull gun metal finish is also supplied which gives the appearance of hard rubber. It is applied with a brush and it is claimed that it hardens in 30 minutes and will not crack or peel even when damp. A glossy rubber finish is a third product. This dries with a high gloss and is meant as a substitute for baked enamel. It is particularly intended for lamps and for this purpose the lamp is first given a coat of a special dull elastic finish for a base which dries in 30 minutes and then coated with the glossy rubber finish. The outfit which is sufficient for covering the brass parts of the car, consists of 1/2 pint of each of the dull elastic and glossy rubber finishes.

### Worko Carbon Remover

The latest decarbonizer on the market is the product of the Worko Co., Racine, Wis. This decarbonizer is in the form of a cylindrical stick or roll which is dropped into the cylinder through the spark-plug hole. To apply the decarbonizer it only is

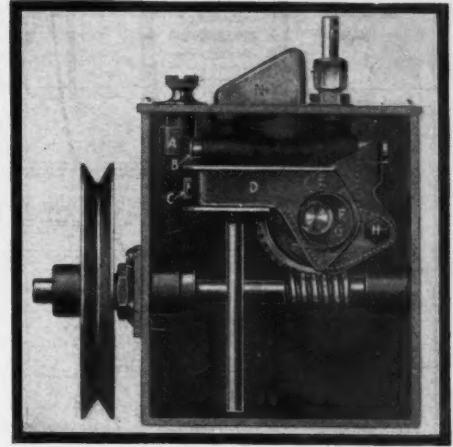


FIG. 6—INTERIOR OF DETROIT FORCE-FEED OILER

necessary to have the motor hot and drop a roll into each cylinder then replace the plugs, open the muffler cutout and race the motor for a few seconds. It is stated also that the composition is burned up entirely a few seconds after the motor is started and generates a gas which disintegrates the carbon deposits. It is recommended by the makers that for best results Worko should be applied every 250 miles. This is not as expensive a procedure as might be expected, for sufficient of the material for treating 24 cylinders can be obtained for \$1.00.

### Sparkler Varnish Renewer

The difficulty of cleaning highly polished bodies with soap and water and chamois skin without spoiling the finish has resulted in the appearance of a new varnish renewer and cleaner under the name of Sparkler. This is a product of the Sparkler Mfg. Co., Fairmount, Ind. It is claimed that Sparkler is a vegetable compound containing no ammonia or turpentine and will not damage the finish.

The material is put up in half-pint bottles which is sufficient for several applications over the car body.

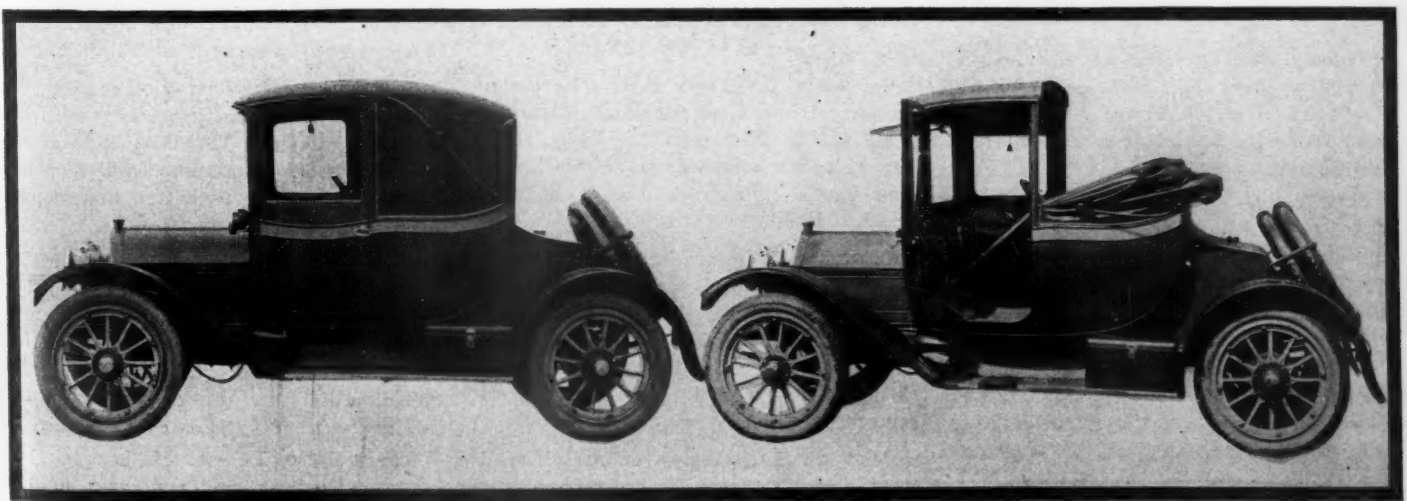


FIG. 5—AMERICAN BODY ALONG EUROPEAN LINES

THE coupe-landaulet body design which is coming into prominence in Europe made its debut in America at the open-air show at Indianapolis last week in the exhibit of the R. J. Irvin Mfg. Co. Most of the features of the late foreign designs are embodied in the new Irvin body, which is illustrated above. There is an abundance of carrying space, wide doors, extra-wide seats, ventilation, and a top that can be quickly raised and lowered without getting out of the car. In the seating facilities, the body provides for four passengers, three on the 50-inch main seat and one on the auxiliary seat. The demand for luggage-carrying capacity is met by arrangements under the seat for two suitcases, and provision for swinging the back panel of the seat forward.



# Brief Business Announcements

## New Agencies Appointed by Pleasure Car Manufacturers

Town.	Agent	Make of Car	Town	Agent	Make of Car
Alliance, Neb.	Nebraska Land and Auto Co.	Cartercar	Mansfield, O.	E. E. Ditch	Hudson
Boyer City, Mich.	W. J. Lewis	Gaylord	Mexico City, Mex.	Chihuahua Motor Car Co.	Ohio
Bucyrus, O.	Bucyrus Cycle and Auto Co.	Krit	Montreal, Can.	O. Massicotte & Co.	National
Chapin, N. Y.	John J. Hixson	Gaylord	Philadelphia, Pa.	American Automobile Co.	Marion
G'd Rapids, Mich.	Bruff W. Olin	Jackson	Seattle, Wash.	Sears Motor Car Agency	Hupmobile
Harlan, Ia.	Louis Christiansen	Cartercar	St. Paul, Minn.	Martin Motor Co.	Bergdoll
Hyannis, Neb.	Samuelson Bros.	Cartercar	Syracuse, N. Y.	W. R. Shaw	Kelly-Springfield
Jackson Center, O.	Rogers Garage and Light Co.	Maxwell	Toledo, O.	Baumgardner & Kibby	Oakland
Kansas City, Mo.	Holmes & Harves	Stearns	Upper Sandusky, O.	M. C. Bowen	Hudson
Lancaster, O.	A. Baumann & Son	Cole	Washington, D. C.	Probey Carriage Co.	Michigan
Madison, Wis.	Hofweber & Son	Abbott-Detroit	Wausau, Neb.	Otto Hult	Cartercar
Mansfield, O.	Mansfield Auto and Supply Co.	Krit			

**NEWBERRY, S. C.**—The Summer's garage has been opened here.

**Jamestown, N. Y.**—R. MacDonald is arranging for a show to be held in his garage April 10-13.

**Lima, O.**—The Mack garage, of Lima, O., has opened a motor livery business in connection with the garage and sales business.

**Tacoma, Wash.**—E. R. Wheeler has sold his interest in the Pacific Car Co. to L. J. W. Jones, a prominent Tacoma capitalist.

**Allerton, Ill.**—Barton Parish, for several years employed in the Robert Holmes & Brothers' garage, of Danville, Ill., has opened an agency, garage and repair shop in this place.

**Washington, D. C.**—V. N. Cushman and Arthur Foraker have formed the Potomac Motor Car Co., and will handle the Marmon with temporary quarters at 1218 Connecticut avenue.

**Atglen, Pa.**—The firm of Townsend Brothers hereafter will go under the name of Townsend Brothers Motor Co. It has taken the Ford agency in Chester and Lancaster counties.

**Philadelphia, Pa.**—The Regal Sales Co., of Philadelphia, has removed from 514 North Broad street, to more commodious quarters at the northwest corner of Broad and Cherry streets.

**Portsmouth, N. H.**—The Alpena Boston Motor Co., handling the Alpena cars, has established a branch agency and service department at Portsmouth, N. H., where Horace P. Seymour will be manager.

**Wausau, Wis.**—T. H. Jacobs has purchased the Christian Science church building and will remodel it into a garage and salesroom. He will use his present building as a warehouse and auxiliary showroom.

**Somersworth, N. H.**—The Matthews & Langley Automobile Co. has just been formed to take the agency for Abbott-Detroit and Krit cars for York county, Me., Strafford county, Portsmouth and Newmarket, N. H., and the salesrooms will

be located at Somersworth, which is a central point for all the places.

**Chicago**—The Metzger-Herrington Co., distributor of the Argo electric, has taken Illinois and Indiana for the Gabriel snubbers.

**Columbus, O.**—Joseph's garage, 160 South Champion avenue, has started a taxicab department in connection with the care and repair of cars.

**Jackson, Mich.**—Fred L. Morgan, formerly with the Baker Motor Car Co., of Cleveland, has joined the Standard Electric Car Co. as a special representative.

**Boston, Mass.**—John D. Murphy, for some time traveling representative in New England for the Selden company, has resigned to accept a position on the Boston Herald.

**Washington, D. C.**—W. H. Marshall has retired from the Marshall-Parsons Co., agent for the S. G. V. He has been appointed manager of a taxicab company in Indianapolis.

**Detroit, Mich.**—H. A. Daniels has been added to the sales department of the Castle lamp department, with headquarters in Detroit. Mr. Daniels formerly was purchasing agent of the Cartercar Co.

**Columbus, O.**—Harry E. Smith, who recently purchased the stock of motor car parts and accessories of the Early Motor Car Co., has removed his establishment from South High street to 47 West Broad street, Columbus.

**Columbus, O.**—Plans have been prepared for a three-story business block to be erected by the McAllister-Mohler Co. at Fourth and Elm streets which will be occupied by the Columbus branch of the Goodyear company when completed. The structure will be 37 by 75 feet.

**Fond du Lac, Wis.**—The Giddings & Lewis Mfg. Co., of Fond du Lac, Wis., manufacturing a line of engines and machinery and operating a foundry, has increased its capital stock from \$68,000 to \$200,000 to provide working funds for a new department now being established, this

being devoted to manufacture of pneumatic machine tools.

**Tiffin, O.**—J. G. Miller, corner Washington and River streets, has taken the agency for the Overland.

**Henry, Ill.**—The Henry Auto Co. is distributor of Buick cars this season in Marshall, Putnam, Stark and Bureau counties, handling this line exclusively.

**Syracuse, N. Y.**—George Yoa, agent for Abbott-Detroit cars here, is moving into his new garage at 1057 South Clinton street. The building is 110 feet long and has a frontage of 40 feet.

**Kansas City, Mo.**—G. R. Ferguson has opened the Benton garage at 2911 East Thirty-first street. Harry Bench is manager. The company is seeking an agency for a medium-priced car.

**Pittsburgh, Pa.**—E. F. Gerber, local agent for the Michigan Motor Car Co., has charge of the territory east of the Mississippi river and will establish his headquarters in this city.

**Pittsburgh, Pa.**—The Federal Motor Car Co., which up to April 1 represented the Ohio car in Pittsburgh, has become distributor for the Ohio line in western Pennsylvania and northern West Virginia.

**Baltimore, Md.**—The agency for the Shawmut tires in Baltimore is now in the hands of Howard L. Crise, 1920 North Charles street. Mr. Crise has also opened up a motor car specialties and supply house at that location.

**Wilmington, Del.**—The Peerless Motor Car Co. of New England has opened a branch which will be under the management of J. W. Breese, a representative direct from the factory. The branch will include a store and service station for the sale and care of Peerless cars exclusively.

**Wilkes-Barre, Pa.**—A. M. Laycock has been engaged as chief engineer of the motor car department of the Sheldon Axle Co. Mr. Laycock formerly was with the Coronet Motor Car Co., of England, and later employed by the English Daimler Co. as designer. For the past several

years he has been chief engineer of the A. O. Smith Co., of Milwaukee, Wis.

**Akron, O.**—The Standard Tire and Rubber Co., 104 Portland street, Boston, has taken the Motz tire for New England.

**Columbus, O.**—Papers have been filed by the Clyde Auto Sales Co., of Clyde, O., increasing the authorized capital from \$5,000 to \$10,000.

**Kansas City, Mo.**—The Bergdoll Car Co., of Missouri, has been organized. This company is a direct factory branch. Ivan De Mitkiewicz is the manager.

**Pittsburgh, Pa.**—J. L. Costella, factory representative of the Pierce-Arrow Motor Car Co., has been appointed local manager of the truck department of the McCurdy-May Co., Pittsburgh agent for the Pierce.

**Davenport, Ia.**—A. C. Klemme, formerly in the local retail business under the firm name of the Klemme Auto Co., has accepted a position with the Western Implement and Motor Co., of Davenport.

**Sheboygan, Wis.**—Joseph Arle has purchased the business of the Lake Shore Tire Co. of Sheboygan, Wis., and will take charge at once. J. E. Schuerle, manager of the company, will establish a similar business elsewhere.

**Birmingham, Ala.**—The Birmingham branch of the Goodyear Tire and Rubber Co. will occupy its new quarters at 420-422 South Twentieth street April 1. The new location is a two-story building 48 by 90 feet. It is arranged in the uniform style of all the Goodyear branches.

**Pittsburgh, Pa.**—The Pullman Motor Car Co., of York, Pa., has established sales and showrooms in South Highland avenue, Pittsburgh. The Pullman Auto Co. of Pittsburgh will be incorporated and will be closely allied with the W. M. Laird Co., with downtown sales offices and exhibit,

with headquarters for sub-agencies in Liberty avenue, Pittsburgh.

**Kansas City, Mo.**—The Oakland Motor Co. has established an Oakland branch here at 1316-18 Grand avenue.

**Omaha, Neb.**—The T. G. Northway Co., of this city has been appointed distributor of Empire tires for Nebraska.

**Warren, Ill.**—The Warren Auto and Supply Co. has opened a garage here, handling the Hudson, Reo and Hupmobile.

**New Orleans, La.**—Warner & Thomson have taken the agency for the Pullman in the state of Louisiana and throughout the south.

**Omaha, Neb.**—H. W. Pope has been engaged by the Johnson-Danforth company to take charge of the sale of Avery and Grabowsky trucks.

**Montreal**—The state department at Ottawa has sanctioned the change of the name of the Overland Automobile Co., of Canada, to that of United Motor Co., Limited.

**Milwaukee, Wis.**—The Chicago Pneumatic Tool Co. has established a branch for the distribution of the Little Giant motor truck at 188 Eighth street, Milwaukee, in charge of H. B. Shippy.

**Pittsburgh, Pa.**—The Pittsburgh-Chalmers Co. has purchased a plot of ground with 50-foot frontage opposite Forbes field and will erect a display room, a business office and repair shop. Plans call for the expenditure of about \$40,000 in the new headquarters.

**Atlanta, Ga.**—Two new agencies have been established in Atlanta. E. L. Adams and W. P. Price, under the title of the Adams-Price Automobile Co., will handle the Grabowsky trucks in this territory. W. N. Lawrence and M. D. Baldwin have formed the firm of Lawrence & Baldwin,

and will handle the Pullman cars in eight southern states.

**Boston, Mass.**—T. A. Cotter, has been given the agency for the Spit-Fire spark plugs for New England.

**Kansas City, Mo.**—Willis L. Tabb has taken the agency for the Stutz car. Temporary quarters have been secured at 3636-38 Main street.

**Kansas City, Mo.**—The Elmore Valveless Motor Co. has organized to handle the Elmore car. Salesrooms are located at 1328-30 Grand avenue.

**Mason City, Ia.**—O. M. Crawford, formerly manager of the advertising and service departments of the Colby Motor Co., Mason City, Iowa, is now with the Zenith Carbureter Co.

**Kenosha, Wis.**—The Kenosha branch of the American Brass Co., formerly the Chicago Brass Co., of Kenosha, will be equipped with a large rod mill during the present year.

**St. Louis, Mo.**—The Imperial Automobile Co. has been formed in St. Louis by M. L. Weber, formerly with the Oakland Automobile Co. The agency for the Imperial line has been secured.

**Carthage, Mo.**—W. C. Bryant has built a new garage at 505 South Main street. The building is 50 by 200 feet, with twenty windows on each side and skylights in the roof. The garage has an entrance at each end, with glass fronts in the doors.

**Philadelphia, Pa.**—The Boulevard Garage and Sales Co., Inc., has established new showrooms at 1405-1407 Race street for the distribution of the better known makes of foreign cars. In addition, the company is also agent for Pennsylvania, New Jersey and Delaware of the American-made Lenox car.

**East Orange, N. J.**—Aymar & Bradley Co., capital stock \$50,000; to deal in motor cars; incorporators H. H. Picking, C. O. Geyer, F. E. Ruggies.

**Elizabeth, N. J.**—James S. Griffin Co., capital stock \$10,000; to manufacture motor cars, tire tubes, etc.; incorporators E. M. Scanlon, A. R. Eaton, Jr., R. L. Raton.

**Wilmington, Del.**—Automobile Tire Filling Co., capital stock \$100,000; incorporator M. L. Rogers.

**Akron, O.**—West Hill Garage Co., capital stock \$12,000; to deal in motor cars and supplies; incorporators S. A. Kepler, A. O. Wood, M. I. Stouffer, D. Bartrum, M. L. Baumgardner.

**St. Paul, Minn.**—Speed Punctureless Tire Co., capital stock \$300,000; to manufacture and deal in motor cars; incorporators W. H. Shafter, E. D. Mocar, J. P. Ernster.

**Evansville, Ind.**—Victor Automobile Co., capital stock \$8,000; to manufacture motor car parts; directors P. B. Fellwock, W. E. Fellwock, J. F. Fellwock, H. F. Nolts.

**Los Angeles, Cal.**—Whittier Auto-Truck Co., capital stock \$25,000; directors E. L. Essley, G. F. McDill, V. M. Hodgins, L. O. Essley, R. H. McDill.

**Wilmington, Del.**—Postles-Prouse Co., capital stock \$50,000; to deal in motor cars; incorporators J. H. Willett, G. P. Postles.

**Placerville, Cal.**—Placerville Auto Co., capital stock \$25,000; incorporators J. M. Birch, E. J. Becker, S. L. Watkins.

**Richmond, Va.**—Stauton Motor Co., capital stock \$4,000; J. L. Baugher, president; J. W. H. Pilson, vice-president; G. A. Allen, secretary.

**Toledo, O.**—Dennis Motor Co., capital stock \$25,000; incorporators R. H. Davis, G. W. Close, A. E. Reid, R. S. Woodrow, J. G. Melster.

## Recent Incorporations

**Cleveland O.**—Peet Machine Co., capital stock \$10,000; to manufacture tools, dies, machinery, motor car parts; incorporators A. J. Peet, C. J. Robinson, S. T. Peet, I. F. Allen, B. V. Selby.

**New York**—Standard Auto Renting Co., capital stock \$10,000; to deal in and rent motor cars; incorporators D. C. Goodman, W. Machol, E. B. Koenig.

**Newark, N. J.**—North Jersey Auto Supply Co., capital stock \$80,000; general motor car business; incorporators M. Permission, C. G. Butler, E. C. Mehrhof, F. W. Mead.

**Greenwich, Conn.**—Porto Rico Motors Co., capital stock \$150,000; to manufacture motor cars; incorporators M. A. Mills, Jr., L. J. Whiteside, E. J. Ryan.

**Chicago**—Motor Sales Co., capital stock \$10,000; to manufacture motors; incorporators I. N. Walker, F. L. Goff, M. M. Miller.

**Sharon, Pa.**—Auto Transit Co., incorporators G. W. Burdick, R. B. Graham, J. S. Hoffman.

**Orangeburg, S. C.**—Carolina Motor Co., capital stock \$3,000; general motor car business; incorporators C. A. Stroman, J. M. Zeiger.

**Cincinnati, O.**—Oskamp Auto Supply Co., capital stock \$25,000; to deal in motor car supplies; incorporators William Oskamp, W. H. Oskamp, E. G. Oskamp, W. V. Oskamp, C. E. Classen.

**Detroit, Mich.**—Suburban Motor Car Co., capital stock \$1,000,000.

**Manistee, Mich.**—Manistee Motor Co., capital stock \$51,000; to manufacture motor cars; C. Elmendorf, president; G. M. Burr, secretary.

**Riverhead, N. Y.**—Vail-Campbell Co., capital stock \$5,000; incorporators H. E. Campbell, R. H. Vail, K. Campbell.

**Utica, N. Y.**—Zargil Kerosine Engine Co., capital stock \$100,000; to manufacture motors; incorporators B. T. Gilbert, G. A. Frisbie, J. A. Zardell.

**New York**—Market Auto Garage Co., capital stock \$1,000; incorporators P. Garofalo, J. Sivigila, J. M. Vincent.

**New York**—Mitchell-Edmonston Garage Co., capital stock \$10,000; incorporators L. A. Mitchell, G. E. Edmonston, J. P. Bickerton, Jr.

**Yonkers, N. Y.**—Yonkers Auto Service Co., capital stock \$2,000; to manufacture motor cars; incorporators G. G. Fry, F. P. Hoffman, E. Keale.

**Brooklyn, N. Y.**—D. S. P. Automobile Specialty Co., capital stock \$5,000; to deal in motor car specialties; incorporators C. F. Sendall, W. Price, G. Sendall.

**New York**—Havers-Imperial Auto Sales Co., capital stock \$25,000; incorporators M. Mayer, J. McBrien, J. F. Barrett.

**Brooklyn, N. Y.**—Eureka Non-Skid Mfg. Co., capital stock \$2,500; to manufacture accessories; incorporators H. E. Bradford, J. Colbourne, B. Rolston.

**New York**—Charles H. Tucker Co., capital stock \$100,000; to manufacture tires and tubes; incorporators C. H. Tucker, E. R. Wood, H. W. Solomons.

**New York**—Eighteenth Street Garage Co., capital stock \$5,000; incorporators W. F. Donnelly, D. E. Peel, A. E. Magnus.



# Manufacturers' Communications



## CARE IN CAR MANUFACTURE

INDIANAPOLIS, Ind.—Editor Motor Age—More than 10,000 different inspections are necessary before a well-made motor car is ready to be placed on the salesroom floor. This seemingly extraordinary number of inspections is explained by the fact that every part of the car is made in the Marmon factory, and even the jigs and tools used by the workmen are made under the direct supervision of the factory experts. From the raw material until the car finally leaves the factory each individual part is subjected to from five to eighteen inspections and tests, which increase in strictness as the car nears completion.

Take for instance the raw material which is received at the factory in the shape of steel ingots. Each bar of steel, bronze and aluminum, is numbered and a hole is then bored in it. The metal shavings are placed in an envelope bearing a number corresponding to that of the ingot, and these shavings go to the chemists for analysis. If they fail to come up to the specifications the bar is rejected and returned to the steel mill. Then, after the forgings and rough castings have been made they are again inspected and analyzed.

After this process the real construction work of the car is begun. Every day the entire staff of foremen meets to formulate plans for the day, and to decide what limits of hardness, measurement, etc., shall be set for the day's work. The recommendations are put on the operation sheets, which then go to the workmen for execution. The minuteness of the foremen's calculation may be inferred from the fact that the outside limit of variation in gauging the motor's parts is one-tenth of one-thousandth of an inch.

The operation of the tests for hardness is one of the most interesting features of the entire inspection process. Before going to the stock room for the first time, an instrument called a scleroscope is used to determine the degree of hardness. This intricate device determines at a single operation even the amount of carbon in the various parts.

The method of inspecting the assembling of the motor is most interesting. The parts are drawn from the stock room and assembled into units. Every motor is divided into twelve or more of these units, all of which are drawn separately from the stock room.

After the units are assembled they are put back, then drawn by another department, inspected, and re-assembled. After this rigid inspection the motor is ready for its initial testing.

One of the first tests to which the com-

plete motor is subjected is on the lapping stand, a test that continues on an average for 7 to 10 hours for each motor. On the lapping stand the motor is not run under its own power, but is pulled by another motor, the object being to free up the new job, as it is technically labeled.

Another rigid test is the fan test, during which the motor drives a large fan for a period ranging from 10 to 12 hours. Naturally the weak spots, provided there are any, crop out under this gruelling strain.

At this point, in the process of building, the motor is taken apart, re-inspected and re-assembled for the horsepower test. The dynamometer is used in this inspection. It is an interesting fact to note that while the car which the motorist buys is rated at just so many horsepower—32 in the case of the Marmon—the motor has to have at least 15 horsepower in excess of that rating in order to pass inspection. After the horsepower test, the motor goes to the chassis department and is installed.

The rear axle, is assembled in units, just as the motor. It is tested on the stands for quietness, and this constitutes one of the most exacting tests in the whole routine. After being finally passed, the rear axle, too, goes to the chassis department and is installed in a test car.

Everyone is no doubt familiar with the tests that now come to the car, for the outdoor test is what the public sees most of, when the jumper-clad mechanics take the stripped chassis out on the streets. All the Marmons, however, are tested on the Indianapolis motor speedway where the irresistible temptation of the tester to beat it results in bringing out every weakness in a very short time, with a thoroughness that exceeds road or hill-testing. All the engines must show a certain high mileage on the 2½-mile track and the test is continued for 2 and often 3 days.

After the speedway test the motor is thoroughly cleaned and inspected, valves ground and carbon removed, after which it goes to the paint shop. From there to the final assembling department where the bodies, fenders, accessories, etc., are installed. Still another rigid test is imposed on the completed car before the final O. K. is stamped on the ticket.

Generally speaking there are about twelve inspections of completed parts and from one to fifteen for every minor piece of material. It takes time and great expense to conduct such tests but every motor car manufacturer will affirm that it is necessary in order that every buyer may get the best product of the factory.—Nor dyke & Marmon Co.



## REVERNISHING A MOTOR CAR

New York—Editor Motor Age—The only kind of revarnishing of a motor car that is practical for the average layman is where the finish is in fair condition and is not very badly cracked. The usual process for such work is to first remove all parts and mark them plainly. All greasy parts of the car should then be washed with benzine by the men employed in the job.

The next step is to wash the entire car with warm water to make it as clean as possible for the actual refinishing process. All blemishes should now be touched up to match the rest of the surface. The color used is what is known as coach or motor car color and can be bought in pound cans. It comes in paste form and should be thinned with turpentine so that it can be applied thinly and freely by the workmen.

A little Japan dryer—a material which is added to the mixture to dry the color—should be used. The paint dealer from whom the color is bought can advise just what quantity of the dryer secured it will be necessary to use. A small camelhair brush should preferably be used for the touching up. In touching up care should be taken not to get any of the color on the adjoining surface but to confine it entirely to the spots in order to prevent spoiling the job.

After the color is dry, the work should be smoothed off with curled hair or steel wool. The next step is to apply a coat of rubbing varnish, or over very pale work a pale varnish. This coat of varnish, when dry, should be rubbed down with pumice stone and water. For the rubbing, a piece of burlap or rubbing felt about 4 inches square should be used. It should be dipped first into the water, then into the pumice stone and the surface rubbed regularly and evenly so that one place will not be rubbed more than another. When working around the edges or corners care should be taken not to cut entirely through the surface of the varnish. Don't let the pumice stone get dry on the cloth but keep the cloth well wet with water. When the gloss of the varnish seems to have been removed and the work looks dull, smooth and even, the rubbing should be discontinued and the surface rinsed with clean water and allowed to dry before the next operation.

The next step is to give the motor car a coat of good finishing varnish. The last coat should be allowed at least a week to dry, when the motor car should be sponged off with clean cold water and dried with a chamois skin. It is then ready for use and can be turned over to the customer.—Pratt & Lambert Advisory Department.